GASOC INTERNATIONAL CONFERENCE 2022

# SCIENTIFIC PROGRAMME

**OCTOBER 22- 23**

Sheffield City Hall
Sheffield, UK
FACE TO FACE/VIRTUAL

# SCIENTIFIC PROGRAMME

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## Introduction

**Fiona Linton**
*GASOC Anaesthetics rep and conference research lead*

Selecting the abstracts from the high quality submissions we've had this year has been both enjoyable and challenging. Highlights include the wide range of topics covered, targeting GASOC's conference theme this year of sustainability and it has been inspiring to see the breadth of work being carried out internationally looking at sustainability both environmentally and in building up and growing surgical, obstetric and anaesthetic practice globally. Thank you to all the authors for their submissions!

Many thanks also go to the following, who were involved in abstract selection:

Gerard McKnight

Ryan Ellis

Jan Man Wong

Jean Ong

Vijna Boodhoo

Sara Mohan

Hannah Raval

Cathy Howell

Will Bolton

Henry de Berker

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## Oral presentations

The 3 strongest abstracts have been selected for oral presentation

**Ethical challenges in the implementation of global surgery: The Non-maleficence principle**

**AC Toguchi, TJ Galle, IL Basso, MN Borba.**

**Introduction** Surgical care is inaccessible for 90% of people in low and middle-income countries (LMIC). To achieve universal health coverage, WHO encouraged the implementation of an essential set of surgical services in primary health care (PHC), nominated “Global Surgery”. Identifying the ethical challenges for implementation becomes relevant for the safe provision of such care.

**Aims** To investigate the main ethical challenges for implementing the "Global Surgery" strategy in primary health care, focusing on the principle of non-maleficence.

**Methods** This is a descriptive-exploratory study based on documental and bibliographic research techniques that consisted of collecting documents on the websites of the World Health Organisation (WHO), Pan American Health Organisation (PAHO), and articles in scientific databases. As a theoretical framework, the principle of non-maleficence of Beauchamp and Childress' Principlist Theory was used.

**Results** Of the 5 documents found on the WHO website, none addressed ethical challenges to implementing "Global Surgery". No documents were found on the PAHO website. Of the 3 articles found, all discussed the principle of non-maleficence, which we compiled into 3 categories: i) resource-training relationship: the surgeon must have sufficient skills to adapt to limited resources to achieve acceptable results; ii) longitudinal care: the surgeons' volunteer missions must be sustainable in the long term; iii) prioritisation of quantity over quality: when performing as many surgical interventions as possible, the surgeon cannot follow the results that will arise from this service.

**Conclusion** It was concluded that: a) essential surgical care in PHC is still not part of PAHO’s agenda, despite the fact that the offer of surgical care in the region is marked by inequities; b) the WHO documents on "Global Surgery" do not discuss the ethical challenges of its implementation; c) the observance of non-maleficence requires the preparation of the team for the sustainability of the mission, cultural competence, and understanding of the scarcity of local resources.

**Designing Low-Cost Simulation Model for Laparoscopic Appendicectomy and its application for surgical training in the lower middle-income countries**

**B Karki**

**Aims** To develop low-cost simulation model for Laparoscopic Appendicectomy and to assess its application for the surgical training in Low- and Middle-Income Countries (LMICs). Simulation training has proven itself as an integral part of postgraduate surgical education and is predominantly used in high income settings. It is still yet to be introduced in most of the LMICs despite its potential benefit due to its high cost. Our model aims to bridge the disparity.

**Methods** Model Development: The process is further categorised into pre-development, development and post development phase. Autodesk Fusion 360 software was used to design the appendix mould which was 3D printed using Ultimaker Tough PLA material. In the negative mould, latex material,

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Reschimica Shore 20 silicone was used. Validity Testing: FACE Validity of Laparoscopic Appendicectomy model was done. Simulation (Proto-Type Testing) was carried out by higher surgical trainees and further model assessment using Five-Point Likert Scale.

**Results** Successful development of a local low-cost Appendix model (under £5) vs. present day market models (~£ 30). Proto-Type testing suggested good simulation steps up to the mobilisation of appendix. However, trainees and consultants suggested amendments in the model features (thicker mesoappendix, presence of the vessels impression, broader caecum) which is noted for the development of version 2.0.

**Conclusion** As these simulation models assist in providing standardised and safe methods for training, the notion of creating low-cost Laparoscopic Appendicectomy simulation models has a plethora of potential benefits for surgical simulation in LMICs which also deserves support from the industry and charities.

**A Case Report of Multiple Urogenital Abnormalities Detected During and Post-surgery in a 20 year old Primipara in Uganda**

**PS Ayella-Ataro, S Omara, G Malemeko, FR Asiimwe, F Amadi, S Ononge**

**Aims** A case report illustrating multiple Urogenital Congenital anomalies detected in a 20-year-old primipara who presented to our hospital with Post-Partum Haemorrhage (PPH) two hours after home delivery on 24th April 2022.

**Methods** The patient admitted to the Hospital; history and examination revealed retained placenta (Placenta Percreta) as the cause of PPH. Laparotomy (Sub-Total Abdominal Hysterectomy) was performed, at which point abnormalities were reported. Ten days post-surgery an abdominal ultrasound scan was done in a private facility, which sparked media headlines-allegations of kidney harvesting during the surgery. This warranted police and professional investigations by HMU, leading to a Computerized Tomography Urogram (CTU) being performed. Institutional role mandated the regulatory/ethical approval.

**Results** At Surgery: Biconuate Uterus with smaller right side, small right ovary measured 2 x1.5x1.2 cm annexed on the fundus, fallopian tube about 0.7cm long. Placenta Percreta infiltrated the lower Segment, body up to fundus, firmly adherent. Radiologic: Ultrasound Right Kidney not visualised, Left Kidney showed compensatory enlargement. CTU 24 days later revealed: 1. No Kidney tissue in right renal bed, no right ureter visualised. Uterine stump noted. 2. Left enlarged kidney measuring 12.7x4.9x6.5cm (compared to average normal of 11x4x3cm in females) with two fused renal upper and lower moieties and separate Pelvic-Calyceal systems 3. Left Fused Ureters at the point of Pelvic-Ureteric Junction.

**Conclusion** The patient was found to have a congenital right to left crossed inferior renal fused ectopia with ureteric fusion. Multiple urogenital abnormalities were diagnosed during surgery and post-surgery. There was a missed opportunity to ultrasound scan during the pregnancy; multiple factors, including hospital policy recommend three scans. Media allegation of harvested Kidney during surgery unfounded, press conference was held to clarify.

***N.B. The oral presentations will be given from 9:10am on Sunday 23rd October (subject to change, please check programme on the weekend)***

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## Poster presentations

**Surgical training sustainability: The experience of surgery in foundation programme**

**GR Halliday, CM Allison**

**Aims** The ability to train, inspire and facilitate career progression is vital for a sustainable surgical training. The aim is to assess Foundation Trainee (FT) surgical experience during the UK Foundation Programme (UKFP) and identify themes regarding how to improve training.

**Methods** Foundation year doctors across all deaneries were selected to participate. Using an online questionnaire, UKFP surgical experience underpinning surgical rotations was assessed (n=127). No ethical approval was required.

**Results** Evaluating FTs surgical rotation: 71% disagreed they were inspired about a surgical career; 72% disagreed they were provided opportunities to develop surgical skills; 66% disagreed they were provided surgical career information; 72% disagreed they were able to build a surgical portfolio, and 90% agreed their surgical rotation was more service provision than training. During their surgical rotation: 82% attended theatre 0 to 5 times, and 90% did not attend clinics. FTs considering surgery as a career (n=48): 84% stated that their surgery rotation made them want to pursue a career in surgery less. In addition, FTs that did not want to do surgery (n=79): 60% stated that their surgery rotation made them want to pursue a career in surgery less. Qualitative themes for improvements included increased senior support, increased staffing levels, dedicated theatre time, research opportunities, surgical skills teaching and protected theatre time.

**Conclusion** This study suggests UKFP is providing insufficient surgical training. Changes in levels of support, staffing, teaching, and rotas could improve the experience of FTs in the UKFP: this could increase sustainability of surgical training.

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**To evaluate the role of Neutrophil-Lymphocyte Ratio (NLR) in predicting the risk of amputation and prognosis in patients with diabetic foot disease**

**S Manduri, R Parikela**

**Aims** To investigate the association between Neutrophil-Lymphocyte Ratio (NLR) and wound healing in diabetic wounds.

**Methods** The outcomes of diabetic foot ulcers in 100 patients admitted to surgical wards were assessed. Demographic, patient-specific, and wound specific variables as well as NLR at baseline visit were assessed. Outcomes were classified as ulcer healing and chronic ulcer. The data was entered in Microsoft Excel and analysed using SPSS Statistics version 16.

**Results** The mean (SD) age was 57.1 (11.29) years. 58% of subjects were females and 42% were males. The mean (SD) duration of Hypertension was 10.3 (3.50) years and that of Diabetes Mellitus was 9.49 (3.03) years. 53% had a history of trauma, 48% of subjects had pain, 51% had gangrene of foot. The mean (SD) CBP, Neutrophils, Lymphocytes and Neutrophil-Lymphocyte Ratio was 20.24 (2.89) per thousand, 94.73 (3.21) %, 14.97 (3.23) % and 6.65 (1.52) respectively. 58% had healing ulcers and 42 had non-healing ulcers. 44% of study subjects had NLR <6 which is normal and 56% had NLR >6 which is abnormal. Among 58

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subjects with healing ulcers, 44 (75.9%) had NLR<6 and among 42 of non-healing ulcers, 42 (100%) had NLR >6. This was statistically significant (p-value <0.001). The sensitivity of NLR >6 in predicting non-healing ulcer was 100% with a specificity of 75.9%. The positive predictive value was 75% and negative predictive value was 100%. The mean (SD) NLR in the healing group was 5.15 (0.65) and in the non-healing group was 8.205 (0.84) and this was statistically significant. This shows an increased NLR has a predisposition towards non-healing chronic ulcers with poor prognosis.

**Conclusion** NLR is a good prognostic variable in predicting the outcome of diabetic foot ulcer. The sensitivity of NLR >6 in predicting non-healing ulcers was 100% with a specificity of 75.9%. The positive predictive value was 75% and negative predictive value was 100%.

**Exploring the barriers and facilitators to a career in global surgery: protocol for a qualitative, semi-structured interview-based study**

**InciSioN UK Collaborative Research Group**
**Corresponding author: Faheem Bhatti**

**Aims** Global surgery can be defined as the multidisciplinary field aiming to achieve world-wide equitable access to affordable, effective, and safe surgical care. Whilst some universities now offer courses in global surgery, there exists no clear pathway to pursue global surgery. Global surgery is often perceived as the process of travelling to low- and middle-income countries to provide surgical care; however, it is much broader, encompassing research, advocacy, and educational activities both in the UK and overseas.

This study aims to explore what junior doctors perceive global surgery to be and explore the barriers and facilitators to careers in global surgery.

**Methods** Semi-structured video interviews of foundation doctors and surgical trainees in the United Kingdom will be conducted online. Participants with a range of interest or prior involvement in global surgery will be recruited. Interviews will be conducted until data saturation is reached. Interviews will be transcribed and analysed using open and axial coding. Questions to be asked at the interview include: What do you understand global surgery to be? What are your thoughts on a career in global surgery? How would you approach pursuing a career in global surgery as a junior doctor? What support is, or would be, useful to junior doctors wishing to pursue a career in global surgery?

**Results** Interviews to be conducted following ethical approval.

**Conclusion** Findings of this study may be helpful in guiding future discussions aiming to boost junior doctor engagement with global surgery.

**Second and Third Delay in Road Traffic Accidents: time to arrival and time to management - predictors of post trauma related outcomes?**

**A Mason**

**Aims** To decipher whether the second (the time taken to reach an appropriate care facility) or third delay (the time taken to receive care from a medical professional) is more influential over patient post trauma related outcomes, and thus which level of care needs to be prioritised in process improvements of the health system.

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**Methods** A retrospective cohort analysis with multivariable logistic and linear regressions was conducted using the Australia India Trauma Systems Collaboration (AITSC) Registry and the Towards Improved Trauma Care Outcomes (TITCO) Project. These databases contain data from 4 university public hospitals from 2016-2018 and 4 trauma clinics from 2013-2015, respectively.

**Results** There were 3,057 RTAs included from the AITSC database and 3,243 RTAs included from the TITCO database. Case characteristics and delay distribution varied across the databases. Over both databases, mortality was associated with moderate, extended, and excessive third delay ($p<0.001$). Primary analysis of the second delay and mortality lacked any pertinent results as did secondary and tertiary analyses of both delays with morbidity and length of stay in ICU, respectively.

**Conclusion** Third delay is associated with mortality in patients in RTAs. This should encourage the Indian health system to prioritise the minimisation of the third delay over the second delay.

**Management and Outcome of Intracranial Fungal infections in Africa: A Scoping Review**

**CB Egu, BD Takoutsing, CS Gillespie, S Bandyopadhyay, OE Dada, SZ Ooi**

**Aims** In this review, we aimed to describe the landscape of Intracranial fungal infections (IcFIs) in Africa by providing information on an up-to-date review on the heterogeneity in the diagnosis and treatment of IcFIs in Africa.

**Methods** This scoping review was conducted using the Arksey and O'Malley framework. MEDLINE, EMBASE, Cochrane Library, African Index Medicus, and African Journals Online were searched for relevant articles from database inception to August 10th, 2021. There was no language restriction and the Preferred Reporting Items for Systematic Review and Meta-Analysis extension for Scoping Reviews guidelines were used to report the findings of the review.

**Results** Of the 5,779 records identified, 133 were included. The age range was 2 days to 78 years with a mean age of 35.7 years, and the majority (52.3%) were males. The majority (84.4%) of IcFIs were meningitis, and the most common (90.3%) predisposing risk factor was HIV/AIDS. Cryptococcus species was the most common (97.1%) causative organism. The most used (64.0%) diagnostic modality was cerebrospinal fluid (CSF) cultures followed by CSF cryptococcal antigen (56.7%). Majority (46.8%) of patients were managed medically with antifungals only, of which most (25.3%) used a dual therapy of amphotericin B and fluconazole followed by fluconazole (21.9%) monotherapy. The neuro-intensive care admission rate was 0.7% with a readmission rate of 2.6% and the mortality rate was 42.1%.

**Conclusion** Most IcFIs occurred in immunosuppressed individuals, and despite the new diagnostic techniques, CSF culture was mostly used in Africa. The outcomes of IcFIs in Africa were poor.

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**Exploring the perceptions of surgeons on the barriers and facilitators of introducing laparoscopy and hysteroscopy in Uganda, and opinions on the feasibility of implementation into surgical training programmes**

**P Bennett**

**Aims** To investigate the perceptions of surgeons on the barriers and facilitators of introducing laparoscopy and hysteroscopy in Uganda, and to explore their opinions on the feasibility of implementation into surgical training programmes.

**Methods** 10 semi-structured interviews were carried out remotely with general surgeons and obstetricians/gynaecologists across Uganda, and participants were recruited via snowball and purposive sampling techniques. All interviews were voice and video recorded after gaining informed consent, and were then transcribed verbatim and analysed thematically.

**Results** Cost, equipment and training were identified as the greatest barriers to laparoscopy, however raising awareness and increasing funding for these were suggested as ways of enhancing accessibility. Facilitators of minimal access surgery also included encouraging universities to introduce laparoscopy to medical school curricula, and working alongside the government to standardise training. Assistance from high income countries could also accelerate laparoscopy implementation, especially in rural areas.

**Conclusion** Although these findings parallel other studies investigating laparoscopy in East African countries, equipment maintenance and the lack of formal training were emphasised as the greatest challenges faced in Uganda. Expanding opportunities to develop skills through earlier exposure via a standardised national programme could overcome this, and increasing training for biomedical technicians would ensure effective, timely repairs of laparoscopic equipment. Advocating the benefits to authoritative bodies and gaining their support will gradually reduce the cost of laparoscopy, and will assist in developing guidelines that guarantee patient safety.

**Histological features of the kidney observed through conventional microscope and paper microscope**

**P Singh, N Phuyal, S Paudel, K Malla**

**Aims** Paper microscope (Foldscope), one of the latest inventions in the field of science is an ultra-low cost, portable, versatile, and waterproof microscope which does not require electricity. The aim of this research was to compare histological features of the kidney observed in the normal microscope and foldscope. This research is focused on the comparison of the histological features of the kidney observed in the conventional microscope and foldscope under 100X.

**Methods** This comparative study was conducted in the Department of Anatomy, Nepalese Army Institute of Health Sciences, Nepal. All histological slides of kidneys present at the Department of Anatomy during June 2019 to September 2019 were included in this study.
Results A total of 25 samples were viewed under the conventional laboratory microscope (CxL) and paper microscope (Foldscope). Foldscope observers were able to distinguish the histological features of the cortex and the medulla of the kidney along with the difference in the

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luminal size and the staining of the cells in the cortex and the medulla of the kidney. Compared to the conventional microscope, Foldscope observers were able to distinguish the features of the cells lining the tubules of the cortex in 5 samples (20%) and they were also able to distinguish the features of the cell lining collecting duct and straight tubules of loop of Henle of medulla in in 6 samples (24%).

**Conclusion** Paper microscope can be a useful alternative to conventional microscope in low resource settings for the identification of histological samples.

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**A retrospective audit of documentation in surgical inpatient records**

**E Gasoma, I Abdalla, M Afifi**

**Aims** Performing an audit of medical records is a preventative measure to identify potential errors that may give rise to investigations. For instance, these assessments can uncover unreported compliance issues that may have an impact on the quality of treatment provided to patients.

**Methods** This is a retrospective descriptive study at a surgical ward in Ribat University Hospital, Sudan. There were 120 case sheets in the sample. Discharge case files from the Medical Records for the previous four months served as the primary source for data collection.

**Results** The planned care was not prepared in accordance with the surgical department's usual protocol, and the records were not deemed to be accurate.

**Conclusion** It is a legal requirement for medical records to include a complete, accurate account of every patient's specific care or interaction with hospital staff. In a hospital, medical records are a vital and crucial document. These documents are essential for arranging future hospital medical care as well as for legal concerns.

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**Obstetric Violence and the COVID-19 Pandemic in Brazil: A Brief Analysis of Race and Social Class**

**J Pantoja, C Braga, K Gomes**

**Aims** To analyse the impact of the pandemic on obstetric care, with a focus on race and class in Brazil**.**

**Methods** Databases used included PRISMA, Virtual Health Library, PubMed and SciELO, with “COVID-19”, “Health Care” and “Obstetrics” as descriptors. The criteria used for exclusion were: (1) not in the time frame of 2 years, justified by the period of the beginning of the pandemic (2) guidelines (3) systematic reviews (4) studies that covered the proposed theme (5) those that had duplicates. 16 articles were found and after exclusion criteria, 5 were used.

**Results** From February 26th to June 18th, 2020, 978 women were diagnosed and 124 died in pregnancy or post-partum period, a number 3.4 times higher than international rates. 71% of maternal deaths were of black women; 68% of the deaths were of women residing in the North or Northeast region. 30% of white women were hospitalised with low oxygen saturations, 50% of black women were hospitalised with this parameter, which demonstrates less access to assistance.

**Conclusion** The rate of obstetric violence in black women and those with a lower social class has increased considerably, and this also reflects the reality that the population itself, which uses the system,

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deals with daily: the fragility and lack of care for maternal health, evidencing a situation of overload of the health system. It emphasises the importance of the intervention of the Ministry of Health's transparency, across the country, equally, in the dissemination of truthful data for adequate intervention.

**The Use of Improvised External Ventricular Drains in Africa: A scoping review.**

**DA Jesuyajolu, G Aremu, O Olukoya, K Obiekwe, C Okeke, E Edeh**

**Aims** Poor access to neurosurgical equipment is one of the problems limiting service delivery in Africa. Improvised surgical devices have long been used in Africa as a replacement for high-cost standard versions. In this study, we aimed to see if improvised external ventricular drains are being used, how these devices are made, and their outcomes.

**Methods** The PRISMA extension for scoping reviews was used in conducting this study. A search was conducted from inception to July 2022. PubMed, Ovid Embase, and African Journal Online were searched. 3 studies were identified and used. The methods of making the external ventricular drain (EVD) devices were compared and the incidence proportions of improvised EVD-related infections were calculated.

**Results** The standard ventricular catheter was replaced by cheaper alternatives like a size 6/8 feeding tube or a 14-gauge central line catheter. The connecting tube had low-cost alternatives, and in a study, was replaced by a fluid infusion set. Low-cost replacements for the graduated burette for measuring CSF outflow included a basic urine collection bag and a slightly more advanced urometer bag. Aggregated outcomes from the three identified studies show that just over half of the sample survived post-EVD insertion (54%). The incidence proportion of EVD-related infections was 24%.

**Conclusion** This study describes the experience of African centers with an improvised version of the EVD devices and their outcomes. This will serve as a baseline for more research into the use of improvised EVD devices in low-resource settings.

**Success factors in Global Surgical Research Collaboratives in Africa: A Systematic Review**

**F Thomas Onyango Kirengo, S Nchafatso Gikenyi Obonyo**

**Aims** In December 2019, COVID-19 introduced challenges in healthcare & highlighted the need for rapid collaboration, research, and interventions. International research collaborations can respond to rapid global changes by enabling international, multicenter research, lowering bias, and increasing study validity while reducing research time and costs. However, there has been low uptake of collaborative research by institutions and individuals in Africa. We aimed to systematically review key success factors and challenges to collaborative surgical research studies conducted in Africa.

**Methods** A systematic review using PubMed®/ MEDLINE & EMBASE on surgical collaboration in Africa from 1st January 2011 to 31st September 2021 in accordance with PRISMA guidelines. A total of 3,082 studies were identified in the initial search, and 55 papers (2%) met the criteria for inclusion. Data on the study period, geographical regions, research scope, along with the success factors, and challenges, were extracted from the retrieved studies.

**Results** Majority of the collaborations in Africa took place with Europe (76%). Of the 54 countries in Africa, 63% participated in surgical collaborations, with the highest frequencies occurring in South Africa (11%) and Nigeria (8%). Despite this, most publications were from Eastern Africa (43%). Leveraging synergies

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between high- and low-income countries (HICs and LMICs), well-defined structures, and secure data platforms led to successful collaboration. However, the under-representation of collaborators from LMICs was a significant challenge.

Conclusion Available literature provides key insights into the successes and challenges of collaborative research in Africa. There is a need for a detailed qualitative study to explore further the themes highlighted.

**The interaction between malnutrition and safe anaesthesia provision in LMICs**

**K Gramm**

**Aims** Malnutrition affects billions of people worldwide, in both low- and middle-income countries (LMICs) and high-income countries (HICs), with a huge global disease burden. However, LMICs and HICs have differing patterns of malnutrition, and manifestations of malnutrition vary widely on a global scale. Malnutrition affects every aspect of anaesthesia, and is intimately linked to its provision, both in HICs and LMICs. This review aims to discuss the differences in malnutrition worldwide, including in its assessment and in the aetiology and pathophysiology of this disorder. It will also aim to consider specifically the diversity in anaesthetic management of malnourished patients worldwide. Finally, it will aim to evaluate the relevance of literature emerging from HICs, to consider how to improve the pertinence and utility of advancing research in this area to LMIC healthcare systems.

**Methods** A narrative review of the literature available surrounding anaesthesia, malnutrition, and their interplay, focusing particularly on literature published in LMICs.

**Results** The anaesthetic management of malnourished patients has advanced in recent years to improve anaesthetic and surgical outcomes. Strikingly, most research in this area has emerged from HICs. However, there remain significant differences between HICs and LMICs in terms of the assessment, aetiology, pathophysiology of malnutrition, along with different standards and methods of anaesthetic management of malnourished patients.

**Conclusion** It remains unclear how relevant and beneficial research published in HICs is to the anaesthetic management of malnourished patients in LMICs. To improve anaesthetic outcomes in LMICs, it is recommended that HIC authors attempt to increase the applicability of their research to LMICs, and most importantly, LMICs should be encouraged to undertake their own primary research and develop their own clinical guidelines.

**The assessment of neurovascular status documentation of patients presenting with upper limb injuries and introduction of sticker**

**A Kumar, W Watkinson , R Strain, R Knight**

**Aims** A good initial clinical assessment involves examination and documentation of these findings. The idea is to ensure not missing any potential injuries or complications with appropriate medicolegal record keeping. The aim of this audit was to evaluate neurovascular assessment documentation in upper limb injuries in accordance with the current NICE guidelines followed by introduction of a sticker.

**Methods** A closed loop audit was performed, which focused on the neurovascular documentation of

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patients admitted between October 2020 - January 2021 (N = 22) and February 2021 - April 2021 (N = 22). There were 7 parameters evaluated, aiming for 100 % completion in each. After the first Loop we implemented an " Upper Limb neurovascular examination sticker " with the aim of improving assessment and documentation which would ultimately benefit in identification of associated injuries with prompt correction

**Results** In the first loop 6/7 assessments achieved <20 % completion. In the second loop, 4/7 assessments achieved >75%. Most notably, a large improvement in radial pulse documentation was found (from 13% to 77%). Sensory and motor nerve documentation (from 27% to 83%)

**Conclusion** The sticker helps any physician carry out examinations with simultaneous documentation, analogous to a WHO checklist for upper limb injuries allowing acceptance at a global level. This shall help in improved sustainability with decreased re admissions, safe approach during clerking and assessment. We hypothesise this sticker will help reduce injuries, complications, error risk and enhance patient optimisation.

**Defining humanitarian surgery; a modified, international Delphi process**

**G McKnight, R Friebel, R Hargest, on behalf of the RCS England Humanitarian Surgery Initiative**

**Aims** Over the last decade there has been an exponential increase in the terms “global surgery” and “humanitarian surgery” in academia. However, the terms are often used interchangeably and there is no fixed definition of humanitarian surgery. This makes it difficult to compare interventions, outcomes and cost effectiveness since a wide variety of activities are included in these global or humanitarian surgery programs.

**Methods** A modified, international Delphi process will be used over 3 rounds using online software to facilitate responses. A core set of academics and global surgery leaders will be invited by targeted email and a snowball sampling effect will be used through social media to intentionally target responses form Low/Middle Income Countries with predetermined inclusion criteria used to ensure responses have validity. A Likert scale of 1-6 will be used and group agreement with a statement will be indicated by a median of ≥ 4 and group consensus will be indicated by an interquartile range of ≤ 2.

**Results** Round 1 revealed 25 statements. These were divided into 4 themes: Who? What? Where? When? Seven of these statements were excluded in Round 2. The remaining 18 were confirmed by Round 3. The final stage will be to conduct a definition workshop to agree on the wording of the final definition.

**Conclusion** By agreeing on a definition of humanitarian surgery debate and focus can now move to how to ensure humanitarian surgery is delivered to the highest possible standard when and where it is most appropriate.

**Clinical-Surgical Incidence Ratio of Craniosynostosis in Brazil from 2018 to 2020**

**P Carolina, G Daniela, C Enzo, M Gabriel, F João, B Matheus**

**Aims** To evaluate the disproportion between incidence and prevalence of information about congenital cranial malformation and surgical corrections of craniosynostosis in the Brazilian public healthcare system.

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**Methods** The present study is of the analytical observational study, analyzing the period from 2018 to 2020. Epidemiological data were obtained in the database of the Department of Informatics of the SUS (DATASUS), from the form "Hospital Admission Authorization" (AIH), document filled out by the responsible doctor at the time of hospital admission, with the procedures of "Surgical Treatment of Craniosynostosis with Single Suture" and "Surgical Treatment of Complex Craniosynostosis". Also, we obtained data regarding the annual diagnoses of Craniosynostosis (ICD Q75.0). In this way, all patients who were notified as having the ICD were included, regardless of gender, within the Brazilian federation.

**Results** Based on the collected data, the annual sum of surgeries for surgical treatment of single and complex suture craniosynostosis were 200 (2018), 255 (2019) and 169 (2020) surgeries. And it was observed that the notification of the diagnosis of the same change were 35 (2018), 38 (2019) and 30 (2020) cases reported in the Brazilian information system. Providing a total of 624 surgeries and only 103 cases of clinical notification for the congenital anomaly.

**Conclusion** It was noted in the data survey that there is an underreporting of congenital manifestations to surgical notifications. The absence of these data elucidates that the diagnoses are not informed, making its prevalence and incidence not as relevant as they are.

**A systematic review of the use of local anaesthetic wound infiltration by surgically placed rectus sheath catheters in patients undergoing abdominal surgery using midline incision**

**M.A. Yehiyan**

**Aim** This systematic review has been performed to assess the safety and efficacy of post-operative analgesia using bolus infusions of local anaesthetic given via rectus sheath catheters in patients undergoing laparotomy via midline incisions.

**Methods** A PubMed literature search returned twenty-nine studies where rectus sheath local anaesthetic analgesia has been compared with placebo and with epidural anaesthesia. This revealed considerable variation in the methodologies used in the published studies with the majority being non-randomised observational studies. Some studies suggest that rectus sheath analgesia is less effective than epidural analgesia when assessed with post-operative pain scores and the need for additional opiate analgesia. Others suggest that rectus sheath analgesia gives equivalent pain relief to epidural anaesthesia. Number of studies show that patients receiving rectus sheath analgesia mobilise quicker than those receiving epidural anaesthesia, but this was not a universal finding.

**Results** All studies emphasised that rectus sheath analgesia is safer than epidural anaesthesia as it avoids the major complications including post-operative hypotension leading to anastomotic leakage, epidural haematoma, and epidural abscess formation. The literature shows that complications from rectus sheath analgesia are extremely rare.

**Conclusion** This systematic review has shown that although further prospective randomised studies are required, rectus sheath analgesia is safe and effective and should be used in preference to epidural anaesthesia in most patients undergoing laparotomy via midline incision.

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**Can clinical examination be used to accurately predict paediatric scaphoid fractures? A prospective study**

**R Luckwell , T Richards, O Lawrence, C Carpenter**

**Aims** Occult scaphoid fractures are well described in the adult population with clinical findings guiding further investigation. These clinical findings have been less well studied in the paediatric population. Our aim was to investigate the clinical findings of suspected scaphoid fractures and to correlate these findings with eventual outcomes.

**Methods** Prospective data were collected from patients who presented to A+E with suspected scaphoid fractures between 1/1/2022 - 7/4/2022. A standardised proforma guided examination and collected 7 specific clinical findings. Clinical and radiological follow up was performed as per the treating team and analysed. These findings were correlated to eventual diagnosis.

**Results** 37 eligible patients were identified of which 11 had a radiologically suspected or confirmed fracture and the remaining 26 were deemed to have no fracture on completion of follow up. This equates to an annual incidence of approximately 44.5 per 100,000. In the fractured group 45% had 5 or more positive clinical findings compared to only 27% of the non-fractured group. No single positive or negative clinical finding was more prevalent in either group.

**Conclusion** Our data showed as the number of positive findings increased so did the likelihood of a fracture. Despite this, no single finding was particularly useful in clinically distinguishing between the fracture and no fracture. It was therefore not possible to formulate an algorithm for clinical exclusion of occult fractures. This decision should be made on the combination of clinical examination, history and further imaging or follow up. Further data is being collected to investigate these associations further.

**Surgical management of pes planus in children with cerebral palsy: a systematic review of 43 papers covering 2115 operations**

**P Maclness, T Lewis, C Griffin, M Martinuzzi, K Shepherd, M Kokkinakis**

**Aims** Pes planus (or flatfoot) is the most common deformity in children with cerebral palsy (CP). There are several surgical interventions used to treat it: single calcaneal osteotomies; extra-articular arthrodesis; double calcaneal osteotomy; calcaneo-cuboid-cuneiform osteotomy; intra-articular arthrodesis, and arthroereisis. There is currently no evidence on optimal treatment for flatfoot in children with CP. Our purpose is to systematically review studies reporting complications, recurrence rates and radiological outcomes of the surgical management of flatfoot in children with CP.

**Methods** Five databases were searched to identify studies published from inception until July 2021, with keywords relating to flatfoot, CP and surgical interventions. We included prospective, retrospective and comparative study designs in the English language. Data was extracted and tabulated in duplicate into Excel and analysis was conducted using Python SciPy.

**Results** 1220 studies were identified of which 44 met the inclusion criteria, comprising 2,234 feet in 1,364 patients with a mean age of 10.3 and mean follow-up of 55.9 months. Radiographic outcomes showed improvement with all procedures; complications and recurrence rates were too poorly reported to compare. Only 10 (23%) studies were assessed as having a low risk of bias. There was substantial heterogeneity of outcome measures.

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**Conclusion** There is a lack of high-quality, comparative studies assessing the radiological outcomes, complications and recurrence rates of surgical alternatives to treat flatfoot in children with CP. There is currently no clear evidence on optimal surgical treatment.

**Laparoscopic management of peritonitis due to small bowel perforation caused by a fish bone**

**M Hasan, S Chowdhury**

**Aims** To highlight the use of laparoscopy that can be used for the management of peritonitis due to small bowel perforation in developing countries like Bangladesh.

**Methods** An emergency surgical intervention: laparoscopy was performed after the diagnosis was made. A sealed perforation was identified in the jejunum which was adhered with the parietal wall. After adhesiolysis, a fish bone (3 cm in length and 9mm in breadth) was found penetrating the jejunum which was removed and the jejunum was repaired laparoscopically by intracorporeal suturing. The procedure was carried out by using three 05mm ports, one was converted to a 10mm port to extract the fish bone to the exterior. A retrospective history taken after surgery revealed that the patient had ingested Rohu fish (Labeo rohita) 3 days before admission. His postoperative recovery was uneventful.

**Results** The result shows that laparoscopy can be widely used for peritonitis due to perforation rather than going laparotomy.

**Conclusion** This case highlights the importance of considering intestinal perforation by an ingested foreign body as a differential for acute abdomen. Clinical suspicion along with carefully detailed history combined with the appropriate investigation will lead towards the correct diagnosis. Laparoscopy may be tried first to manage perforation due to ingested foreign bodies rather than laparotomy.

**An innovative low-cost model for early career trainees learning to perform manual removal of placenta**

**O Oduola, M Rochford, M Bhuinneáin, M Geary, C Monteith.**

**Aims** The use of simulated obstetric emergencies through local skills and drills or courses like PROMPT, MOET, or ALSO has shown improved outcomes in the management of postpartum haemorrhage (PPH). However, there are few task trainers available for manual placental removal (MROP), and even fewer that are appropriate for a low-resource setting. The primary outcome was to assess if the provision of a dedicated training intervention using a low-cost simulation model might positively influence self-estimated preparedness for practice.

**Methods** The intervention used the flipped classroom design incorporating online theoretic learning followed by face-to-face skills training. Comparisons of the means were made using Wilcoxon signed rank test. A p-value of $<0.05$ was deemed clinically significant.

**Results** There were 24 paired results for interpretation from a national postgraduate year 2 cohort of 29. Trainees' perceived confidence in the skill of MROP had a mean value of 3.33 ±0.92 (neutral response) pre-training and a mean value of 4.5 ±0.51 on completion of the Melon task trainer. The test revealed a statistically significant difference in mean Likert scores pre and post-training ($z = -3.813$, $p=0.0000$).

**Conclusion** This is the first study to utilise a ripe cantaloupe melon to mimic MROP. This method has the benefit of being easily reproducible in low-resource settings globally, where training is often limited by a lack of access to training mannequins.

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**PACU re-imagined: Whipps Cross hospital's COVID Recovery Initiative**

**H Murdeshwar, J Matthews, S Kwok, G Kandasamy**

**Aims** Offering major elective surgeries during the COVID Recovery phase presents several operational challenges. Innovative modifications of existing peri-operative pathways to share in the critical care burden is the need of the hour. Our re-imagined post-anaesthesia care unit (PACU) envisages empowered global healthcare systems with reduced unplanned ITU admissions and improved patient experiences. It offers up to level 1.5 care (inotropic support and enhanced monitoring) in a 2-bedded facility. The efficient integration of peri-operative care across surgical specialities could reduce the number of cancelled major surgeries through the use of enhanced care.

**Methods** We retrospectively analysed various peri-operative parameters of all scheduled PACU admissions following major elective surgeries between April 2021-2022. The cohort included 54 patients aged 42 to 92 years.

**Results** We retrospectively analysed various peri-operative parameters of all scheduled PACU admissions following major elective surgeries between April 2021-2022. The cohort included 54 patients aged 42 to 92 years.

**Conclusion** Our PACU model promises improved patient safety and minimises unplanned ITU admissions and errors during the transition of care with proven economic benefits. This project could potentially sustain major elective services for patients with cancers amenable to surgery in low to middle-income countries through a feasible intervention if replicated.

**Clinical effectiveness and safety of spinal anaesthesia compared with general anaesthesia in patients undergoing hip fracture surgery using a consensus-based core outcome set and patient and public informed outcomes: A systematic review and meta-analysis of contemporary randomised controlled trials**

**S Kunutsor, P Hamal, S Tomassini, J Yeung, M Whitehouse, G Matharu**

**Aims** We conducted a systematic review and meta-analysis of contemporary RCTs to determine the clinical effectiveness of spinal versus general anaesthesia (SA vs GA) in patients undergoing hip fracture surgery using the consensus-based core outcome set, and outcomes defined as important by both patient and public involvement (PPI) initiatives.

**Methods** RCTs comparing any of the core outcomes (mortality, time from injury to surgery, acute coronary syndrome, hypotension, acute kidney injury, delirium, pneumonia, orthogeriatric input, being out of bed at day-one post-operatively, and pain) or PPI-defined outcomes (return to pre-operative residence, quality of life, and mobility status) between SA and GA were identified from MEDLINE, Embase, Cochrane Library, Web of Science (2000 to February 2022). Pooled relative risks (RRs) and mean differences (95% CIs) were estimated.

**Results** There was no significant difference in the risk of delirium comparing SA versus GA: RR=1.07, CI=0.90-1.29. Comparing SA versus GA, the RR for mortality was 0.56 (CI=0.22-1.44) in-hospital, 1.07(CI=0.52-2.23) at 30-days, and 1.08(CI=0.55-2.12) at 90-days. Spinal anaesthesia reduced the risk of acute kidney injury compared with GA: RR=0.59(CI=0.39-0.89). There were no significant differences in the risk of other outcomes. Few studies reported PPI outcomes, with most studies reporting on 1-3 core outcomes.

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**Conclusion** Except for acute kidney injury, there were no differences between SA and GA in hip fracture surgery when using a consensus-based core outcome set and PPI important outcomes. Most studies reported limited outcomes from the core outcome set and few reported outcomes important to patients, which should be considered when designing future RCTs.

**Primary Ureteroscopy in acute urolithiasis – Is it "Sustainable Globally"?**

**M Wani, D Thompson, I Sheikh, G Brown**

**Aims** To investigate management of acute urolithiasis (AU) during index admission by primary ureteroscopy (P-URS). With the rise in prevalence of urolithiasis, the focus has shifted to manage patients presenting with AU during their first admission rather than using emergency stenting (ES) which are followed by deferred ureteroscopic procedures (D-URS). We compared results of ES with P-URS procedures in terms of quality and cost benefits.

**Methods** Study was registered as an audit. In 2019, 82 AU patients underwent ES with no P-URS. In 2020, 72 patients had emergency procedures, 38 had P-URS, 34 had ES. The quality assessment was based in relation to patient factors including - number of procedures per patient, number of days spent at hospital, number of days off work and expertise of person operating. Cost analysis included theatre expenses, hospital stay charges and loss of working days.

**Results** This study revealed that the average stay of patients on index admission who had ES was 1.35 days compared to 1.78 days in patients who underwent P-URS. Patients who had ES, had to undergo D-URS and spent another average 1.5 days in hospital. Overall, additional expenditure in patients who did not undergo primary URS was on an average in the range of £ 1800 (excluding loss of work for patients).

**Conclusion** We found P-URS and management of stones in index admission is very effective in both improving quality of patients as well as bringing down cost expenditure effectively. We conclude P-URS is sustainable globally.

**Challenges in higher surgical training in the UK: Transition from senior trainee to T&O consultant practice - what we don't know but need to know.**

**Z Kamran Siddiqui, R Jayasuriya, C Lewis, J Tomlinson**

**Aims** To identify deficiencies in higher surgical training (HST) related to professional capabilities outside of direct clinical care in the UK.

**Methods** To identify challenges that pose a threat to the sustainability of consultant practice a phenomenological approach was used. The experience of T&O consultants, appointed in the last five years was explored. Field notes from unstructured interviews with five consultants (convenience sampling), were used to develop a topic guide for semi-structured interviews with six new consultants, (purposive sampling). Interviews were transcribed and thematically analysed.

**Results** Newly appointed consultants identified various deficiencies in their non-clinical training; categorised into two themes with sub-themes: Adapting identity: Practice management, Building a reputation, Leadership identity, Trainer identity, Awareness of limitations, Independence vs support; Discovering responsibilities: Job planning, Management structure, Service provision and procurement, Complaints and complications.

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**Conclusion** The identified deficiencies challenge the transition of T&O trainees to consultant surgical practice. These can be reclassified to be modifiable at the trainee level versus intuitional level by stakeholders such as surgical trainees, newly appointed consultants, course directors and employing organisations, to include identified non-clinical aspects. This would promote a sustainable training programme that equips new T&O consultants with clinical alongside non-technical skills to cope with the challenges of an ever-evolving patient community in the UK. Surgical training programmes outside the UK could draw on these themes to identify deficiencies in their surgical training and aim to bridge those by working collaboratively with various stakeholders.

**In-silico drug-target screening for drug repurposing using artificial intelligence**

**A Afsar, M Shetty, K Mohan, P Sen**

**Aims** Develop Artificial Intelligence (AI) model to predict the binding affinity score between drug and protein target and prioritize the higher probability drugs for a given protein target for the further drug development phase

**Methods** We used three datasets, KIBA, DAVIS and 1600 approved drug-target datasets. For each drug 40 different features were extracted from the PubChem database and 4000 sequential features were extracted to target. Using this dataset, a Neural Network was created that could learn the features and predict the affinity accurately. Model performance was analyzed using Root Mean Square Error. Finally, the SARS-COV-2 target was screened using this AI model over the approved drug list to find the best drug with high affinity.

**Results** Our AI model achieved an RMSE of 0.761. Around 72% of drug–target combinations had affinity scores around 9-12 . Among all features, the drug type (agonist, allosteric agonist) feature is the topmost feature that determines the affinity with the target.

**Conclusion** Novel drug discovery and development required 2-3 billion dollars and 8-10 years. Drug repurposing is one of the alternate methods to develop drugs with less time and fewer resources. Our AI model helps in predicting the binding affinity of the drug to the known protein target for drug repurposing. The drugs having affinity scores between 7-12 can be considered a good score. Our model-generated top features determine the affinity score, which can be used for drug/target modification to alter the affinity.

**Green theatre: sustainability in the operating room**

**T Pupi, F Gigola, V Carletti, G Libro, A Morabito**

**Aims** Operating rooms (OR) have a significant environmental impact. Anaesthetic gases, OR waste, the composition of surgical trays and water usage are responsible for OR impact. Our study aimed to ascertain awareness regarding global warming and OR practice among the OR nursing staff of our centre.

**Methods** We investigated the role of anaesthesia, disposable versus reusable materials, hand disinfection and optimisation of the surgical tray. Participants were asked to answer a 25-question questionnaire regarding many aspects of the OR impact on the planet.

**Results** Only 4.5% of respondents were unaware of the OR's environmental impact. While 43.5% assessed inhaled halogens as responsible for the greenhouse effect, nobody could identify all the Greenhouse

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Gases (GHGs). No one chose N2O among GHGs. Only 27.2% of respondents perform total intravenous anaesthesia frequently. Nobody prefers waterless hand rub and a third of respondents found chlorhexidine or povidone-iodine more effective. Sixty-five per cent of respondents assessed that there are instruments in excess in their surgical trays, and 78.2% would revise them. A substantial balance was found in the preference between disposable and reusable textiles.

**Conclusion** This pilot study showed awareness among the nursing staff regarding the environmental impact of the OR but also showed that there is much room for improvement in reducing this impact by making some changes in how we work in ORs. This study led to the creation of a protocol that we wish to implement in our ORs to reduce the amount of waste produced and water usage.

**Quality consent: an essential pillar in surgery**
**A Dadhich, J Raj**

**Aims** To assess the quality of consent form completion in comparison with standard consent form guidelines.

**Methods** We carried out an audit loop based on the collected data from June 2021 to March 2022. It was carried out on vascular surgery inpatients. The group selected were elective vascular surgeries. The patients were randomly selected based on their capacity to consent following the standard vascular procedures consent form guidelines. Data collection was based on: Was a consent form signed? Who signed the consent form? Were all the complications mentioned? Were there any post-operative complications?

**Results** In the first cycle of the audit, the important outcome brought out was that none of the consent forms had all the complications mentioned as per the guidelines amongst which 50% were signed by the speciality registrars, 25% by the consultants and 25% were signed by both the registrar and the consultant. The change implemented was the introduction of printed stickers with all the complications mentioned. In the second cycle after the implementation of the change, the complications missed were reduced to 25%.

**Conclusion** Implementation of printed stickers ensured the quality of consent and reduced missed complications due to human errors. A proper consent process is essential to ensure that patients understand treatment options and the alternatives together with the risks, benefits and likely outcomes of any proposed treatment. It also helps the healthcare system financially by reducing the burden of medicolegal cases and bridges the gap of miscommunication.

**Improving Neurosurgical Education: Medical Students Experience of The Walter E. Dandy Neurosurgical Society**

**C Berjaoui, DP Chadid, J Wellington, K Malik, P Prem, FG Pineda**

**Aims** In this paper, our aim is to assess the effect of online education, as well as the Walter E Dandy Neurosurgical Society's (WEDNS) contribution to neurosurgical education.

**Methods** A cross-sectional online questionnaire was conducted across the globe, via Microsoft forms. Participants were selected using snowballing sampling, through social media platforms and WhatsApp groups (official and unofficial Dandy Neurosurgical Society channels). Data analysis was performed using

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SPSS software. Demographic information about the current Dandy neurosurgical medical student members was collected as well as their medical school curriculum, neurosurgical interest, and research experience.

**Results** A total of 308 medical students and members of the Walter E. dandy Neurosurgical Global Clubs worldwide, filled in the questionnaire, with (57.8%) of the participants being females, and (41.2%) males. Among the participants, (57.6%) stated that their medical schools do provide mandatory courses about neurosurgery within their curriculum, whilst only (17.5%) reported offering clinical rotations within the neurosurgery department. In addition, (40.3%) stated that their medical schools do offer research opportunities within the neurosurgical field. When asked about how much WEDNS contributed to their neurosurgical and medical education, (69.4%) of the students stated WEDNS increased their knowledge.

**Conclusion** Neurosurgical education was no different from any other undergraduate and postgraduate education to be affected by the COVID-19 pandemic and lockdown impositions. Yet, this impact had a positive effect, whereby it brought professionals from the global neurosurgical field alongside medical students, to share and collaborate their vast knowledge and expertise within neurosurgical education worldwide.

**Evaluation of an international lecture series to increase research capacity within LMICs**

**I. Jarratt Barnham, M. Alhabil, N. Marzouqa, L. John, R. Conway-Jones, R. Jurdon.**

**Aims** LMICs shoulder a substantial proportion of global disease but generate only a small proportion of published medical research. Increasing LMIC output is essential to addressing these regions' healthcare challenges. Education to increase research capacity is key to sustainably increasing research output.

**Methods** In response to student feedback to OxPal, an educational collaboration between medical students in the UK and Palestine, an 8-lecture series was developed covering research methods and the practicalities of producing and publishing research. The series was advertised by the OxPal network and consisted of remote, interactive, 1-hour Zoom sessions delivered predominantly by Oxford University affiliates. Participants provided anonymous feedback and agreed to its use for publication. No other ethical approvals were required.

**Results** 180 students attended this series and completed feedback. 62% were medical students (n=112), 25% qualified doctors (n=45) and 9% allied health professionals (n=17). 68% of attendees were from Palestine, with 12 nations represented overall. Using 10-point scales, attendees reported satisfaction with the online format (m=7.5, sd=0.39) and that lecture content was relevant to LMIC practice (m=7, sd=0.37). 96% agreed that content addressed a significant gap in local education provision. Students reported a statistically significant increase in topic understanding following each lecture ($T=1.97$, $p<0.001$). Critical feedback included poor internet connectivity and the need for greater interactivity. Critical feedback included poor internet connectivity and the need for greater session interactivity.

**Conclusions** The course demonstrated both appetite for research education amongst students and clinicians in Palestine, and the feasibility and utility of an international online teaching programme. We hope to encourage other organisations to offer similar educational provision.

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**The Benefits and Complications of Bariatric Surgery in a Tertiary Centre**

**S Golchinheydari, J Crane, I Al Sami**

**Aims** Obesity contributes to a significant proportion of comorbidities including type 2 diabetes mellitus (DM) worldwide. Bariatric surgery (BS) is an invasive technique used for complicated patients. This study outlines both the advantages as well as the acute and chronic complications of BS.

**Methods** After ethical approval was obtained, 354 patients who underwent BS from 2017 to 2020 were anonymously identified from the Royal Hospital, Muscat. Data extraction was completed using hospital records. Patients were assessed before and after surgery using follow-up intervals every 6 months up to 18 months post-surgery. Data was analysed using STATA software.

**Results** 64.4% of patients were women with a mean age of 36.2 years. Patient data compared prior to surgery to 18 months after surgery showed; mean BMI 49.7 to 33.3, hypertension 31% to 26.8%, DM 31% to 19.3%, dyslipidaemia 22% to 20.2%, obstructive sleep apnea 35% to 7%, mean HbA1c 44.5 to 41.7 in mmol/mol. The number of diabetic patients on metformin and insulin decreased from 80% to 7% and 54.5% to 4.5% respectively. The most common post-operative complications in the acute period were vomiting (18.4%), constipation (12.7%) and hair loss (9%), with 54.2% having no complications. After 6 months, the most common complications were still hair loss (6.5%), vomiting (4.5%) and constipation (1.7%). At 18 months, 93.5% reported no complications.

**Conclusion** The study suggests the extensive benefits of BS in patients with “refractory” obesity with related comorbidities, which can be used to compare the benefits of treatment and risks of surgery.

**Implementation of the WHO Surgical Safety Checklist, First Time Experience. A Two Cycles Clinical Audit.**

**N Abubaker, M Abdelrazig, H Bashir**

**Aims** To assess the practice of the newly implemented WHO surgical safety checklist in the department of general surgery.

**Methods** This is an auditing process to implement the WHO surgical safety checklist. As this is a new concept, we decided to make an incremental growth, starting with one department of general surgery. Furthermore, we have decided to start with the first part of the checklist (before anaesthesia). A meeting with all members of the department team was conducted. The whole concept of the tool was simplified. Moreover, some amendments were made to the checklist and distributed to the unit members. The target implementation rate of the WHO checklist was set at 60%. The target for the individual items where the checklist was used varied (refer to the tables and figures). An electronic data collection tool was used. Furthermore, a descriptive analysis was conducted. Ethical approval was obtained from the department director.

**Results** During the first cycle of the audit, which included 34 elective procedures, the WHO safety checklist wasn't applied in the department of general surgery. After the intervention, a total of 23 elective procedures were performed over one month, including GA, SA, and LA (56.5, 34.8, 8.7 % respectively). For the individual checklist items completion assessment please refer to the tables and figures.

**Conclusion** The overall practice of the checklist implementation was 56.5 % of the elective surgeries over one month (target: 60 %). A third cycle will be conducted to improve the practice.

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**Barriers and Facilitators to Surgery for People Experiencing Homelessness in the UK**

**G Manchip, F Bhatti,G Adegboyega, A Mazzoleni, J Erhabor**

**Aims** People experiencing homelessness (PEH) are a vulnerable group in which physical health morbidities are much more common than in the general population. Despite this, inflexible services and appointment systems in addition to negative staff attitudes is leading to exclusion from primary care and mainstream services. However, it is not clear as to the barriers that this patient population face towards receiving safe surgical care. Therefore, we aim to conduct a qualitative study to evaluate key stakeholders' perspective and experiences of barriers and facilitators that PEH in the UK face towards receiving safe surgical care.

**Methods** Semi-structured video interviews of health professionals (General Practitioners, Emergency doctors, surgeons) and key stakeholders (charity and hostel workers) in the UK will be conducted online. Participants will be recruited via the Groundswell and Incision UK networks. Interviews will be conducted until data is saturated. Interviews will be transcribed and analysed using open and axial coding. The following questions will be asked during interview, with follow-up questions (e.g. why):

1. Do you think there is an issue with PEH accessing safe surgical care in the UK?
2. Do you have any experience of PEH not receiving safe surgical care?
3. What do you think are the issues?
4. Are there any facilitators?

**Results** Interviews will be conducted following ethical approval.

**Conclusion** As this is the first study of its kind in the UK, findings may highlight disparities in care for this patient population and guide improvements to practice. As well as increasing general awareness of this global surgical issue.

**Creating a social media campaign for an online course on Female Genital Mutilation (FGM)**

**R Ikhuenbor, HM Morgan , V Kinkaid**

**Background** The online course "Female Genital Mutilation (FGM): Health, Law, and Socio- Cultural Sensitivity" on FutureLearn Platform was run for the first time in 7th February and ended 8th March 2022. The four-week course is designed to create awareness about the complexity of FGM. The course is delivered by different multidisciplinary experts at the University of Aberdeen.

**Objectives** The project primarily aimed to advertise the FGM Futurelearn course, and educate frontline professionals about FGM. The secondary aim was to educate young girls and women about the right to dictate what happens to their bodies. Also, for men to support the campaign. A further aim was to plead with the government to make Female Genital Mutilation course mandatory in medical schools and higher education institutes for healthcare workers. The project aimed to advocate for ending FGM practice and supporting advocacy groups in their messaging.

**Methods** Series of posters with educational information on FGM were created through Canva application then posted Instagram. Different non governmental organisations were tagged along for increased engagement. Posts were scheduled twice weekly during the four-week campaign.
Results In 4 weeks, the account gained 102 followers with 245 total likes, 71 comments and overall,11 posts. 12 participants applied for the course. Other organisations are now collaborating with us.

**Conclusion** There was impressive engagement from both genders. Majority of comments supporting the

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ending of the practice. We hope for more campaigns in the future; on different platforms for more education on Female Genital Mutilation. Course leaders were proactive, ensuring contents were up to date.

**(Instagram: @fgm_education)**

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**Peritoneal Tuberculosis "a rare presentation for a common disease "– Case report**

**GM Abounaggah, MM Ewedah, Z Waffa**

**Aims** Peritoneal Tuberculosis - a rare presentation for a common disease. Our report shows how easily it can be misdiagnosed as either lymphoma, chronic pancreatitis or a pancreatic malignancy.

**Methods** Laparotomy findings were surprising because peritoneal deposits were seen, with multiple whitish small plaques in all bowel loops and omentum, which is commonly associated with carcinomatosis. This patient was also found to have a pancreatic mass on CT scan, minimal ascites and disseminated peritoneal and mesenteric deposits. Abdominal TB is the most frequent form of extrathoracic tuberculosis. It may manifest with perforation, adhesion, stricture, ascites or peritonitis. Among the risk factors for extrapulmonary TB and peritoneal TB, only female gender was in accordance. Our patient is a 40 year old male who has no HIV infection and no history of alcoholism or liver disease.

**Results** In this case, only pathological analysis of the abdominal biopsy specimens was able to distinguish between carcinoma and granulomatous disease. Except for malaise, clinical examination, imaging and intraoperative findings were suggestive of peritoneal carcinomatosis secondary to a pancreatic mass, which would imply a completely different treatment and a worse prognosis.

**Conclusion** Peritoneal tuberculosis can often be misdiagnosed with peritoneal carcinomatosis. It should always be considered as a differential diagnosis, but the diagnosis is rarely easy for clinicians. Tissue biopsy and PCR is essential for establishing the diagnosis of peritoneal TB.

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**The Lack of Global Surgery Discussion in Portuguese and Spanish**

**B Laus Pereira Lima, L Zandonadi Santos**

**Aims** Global Surgery (GS) is the field that aims to improve equitable surgical care across international health systems. Since mid-2010, the major literature produced is in English. It implies difficulty in approaching information and a consequent decrease in access to safe surgery in Portuguese and Spanish speaking countries, which seems contradictory, since Portuguese and Spanish are the most spoken languages after English. To break this cycle, it is necessary that publications and articles are offered in the language of these countries.

**Methods** We conducted a comprehensive literature search using bibliographic databases: PubMed, SciELO, Lilac and Google Scholar were used. The search included the keywords "Global Surgery" with a specific filter for publications in Portuguese and Spanish language.

**Results** At PubMed were found 9 articles, SciELO 14, Lilacs 6. After analysing the abstracts, duplicate articles and those were not related to the proposed topic were removed. The remaining articles, only 6 were available in Portuguese and 5 in Spanish. All of them were published after 2013 and address aspects of GS in African and South American countries.

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**Conclusion** As seen, there are few articles about GS and all of them have been published recently, which indicates the lack of access to the topic in Portuguese and Spanish. By this, we can conclude that we must have a bigger incentive and promote opportunities to expose the theme in native language at Universities, the Medical Community and the general population, aiming to spread safe access to surgery in the international health system, targeting the GS proposal.

**A look at the Inequalities of Neurosurgery Procedures in Different Regions of Brazil from 2016 to 2021: a Retrospective Study**

**LP Batista, MJ Oliveira, C Salamacha, LVS Vieira, TAS Teodoro, KS Kreitmeyer**

**Aims** To analyse the number of neurosurgeons and the distribution of neurosurgical procedures performed in Brazil between 2016-2021.

**Methods** A retrospective and ecological epidemiological study, whose data was obtained from the DATASUS platform. Variables of annual hospitalisation, procedures, number of neurosurgeons and regions of Brazil were used. The data was stored in a Microsoft Excel 2016 spreadsheet with descriptive statistics analysis.

**Results** 40690 neurosurgical procedures between 2016-2021. The most performed procedure was microsurgery for intracranial tumour with a complementary technique (n=11020), followed by microsurgery for intracranial tumour without a complementary technique (n=10677) and craniotomy for removal of intracranial tumour (n=3712). The Southeast region corresponds to 49% of neurosurgeries (n=20056), followed by the Northeast, with 18.5% (n=7537), South, with 18% (n=7320), Midwest, with 8% (n=3160) and North, with 6.5% (n=2617). In 2016, about 1029 neurosurgeons were registered in the system and, in 2021, this number increased by 30%, reaching 1340 neurosurgeons. Moreover, the Southeast region had the highest number of neurosurgeons (n=1769) and the North region was the only one to have fewer than 100 professionals (n=76).

**Conclusion** While the Southeast region concentrates most of the number of neurosurgeons and procedures performed, the North region kept the smallest number. One hypothesis is that neurosurgery is concentrated in the great economic centres, that is, in the Southeast region, remaining weakened in low-income regions, such as the North. Thus, public policies for global surgery promoting sustainable and equitable coverage throughout the national territory are essential.

**Experiences of Women with Breast Cancer in Sub-Saharan Africa**

**F Magwesela, B Matonya, F Koku, P Kayange, G Kivuyo**

**Aims** To identify and synthesise data exploring experiences of women with breast cancer in Sub-Saharan Africa.

**Methods** Medline, Embase, SCOPUS and CINAHL library were searched for articles using qualitative design published on the subject from start to June 2022 using PRISMA guidelines. Furthermore, forward citation, manual search of references and searching of relevant journals were done. A thematic synthesis was carried out on the “results/findings” sections of the identified qualitative papers.

**Results** Of 10,357 records identified, 18 were included in the review, representing 328 women from nine

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countries of Sub-Saharan Africa. Thematic synthesis identified three major themes; Reactions and perceptions, Living with the scars, and Coping. Reactions and perceptions were related to how women discovered their symptoms, reacted to breast cancer diagnosis and disclosed their diagnosis to others, and how they perceived breast cancer treatment. Living with scars related to how women dealt with the effects of breast cancer treatment. The theme of coping related to how women adjusted to having breast cancer.

**Conclusion** This review provides a significant insight into the reported experiences and quality of life of women with breast cancer in Sub-Saharan Africa. These experiences are impacted by factors such as family/community, culture and beliefs. Findings from this review suggest that encouraging and providing support – social, financial, and spiritual – to women with breast cancer could greatly improve their quality of life.

**Adapting Surgical Education for a Post COVID World; Lessons from a Pandemic**

**M Bressington**

**Aims** During the COVID pandemic, footfall on wards was kept to a minimum. Medical education was one of the first casualties as students were less able to get exposure to patients than ever before. We set out to see if student examination skills could be effectively taught in a post COVID environment.

**Methods** Four groups of eight third year medical students rotated through our surgical department and were put through a teaching programme utilising lectures and simulation. Questionnaires before and after the programme assessed student response to this programme. This is a low cost and exposure independent method of teaching surgical examination skills.

**Results** Student's confidence improved across all domains. Whilst academic domains grew the most, significant improvements were also seen in examination confidence, and ability to interpret signs elicited at examination.

**Conclusion** Simulation is a powerful and effective tool which is currently underutilised in surgical education. The results from this study can have wider ranging implications with global health applications as it provides a path for surgical teaching in settings where easy patient access may not be possible, but a method to improve student confidence and competence with assessing and diagnosing the surgical patient is desired. The method is easily reproducible and future facilitators can be trained to provide this service with minimal equipment.

**Environmental Sustainability and Total Intravenous Anaesthesia – What are Current Attitudes and Practice?**

**K Watson, T Smith**

**Aims** Total intravenous anaesthesia (TIVA) is often cited as having less environmental impact than the volatile anaesthetic gases. However the increasing use of TIVA has its own considerations around sustainability, such as the use of single use plastics and water pollution. The aim of this survey was to gain an insight into current practice, attitudes and behaviours surrounding TIVA.

**Methods** An anonymous online survey was sent to members of an anaesthetic department covering one

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health board, including career grade and trainee staff members.

**Results** 38 members replied. TIVA was used often by half of respondents. 42% felt IV fluids should always be given if using TIVA. 57% mainly used depth of anaesthesia monitoring only when muscle relaxation was given. There was a 50:50 split on whether less antiemetic agents were given whilst using TIVA. Respondents were also asked about use of single use plastic syringes and nitrous oxide as part of an IV anaesthetic.

**Conclusion** Propofol and opioids are not greenhouse gases, but their production and use has its own environmental impact. We wish to raise the issue of are we doing enough within anaesthesia to mitigate the impact of our practice, without impacting on patient care? If global healthcare were a country, it would be the fifth largest carbon emitter on the planet and much of the environmental emissions generated by healthcare are indirect or embodied in upstream manufacturing of products. Free text comments were also welcomed and are insightful.

**DOOR-TO-OR Time in Emergency Surgery - Clinical Audit Report**

**M Ewedah, Z Waffa, A Waheed, M Hany, N Hamouda, D Wafiq**

**Aims** We aim to identify the DOOR-TO-OR time in emergency surgery across the spectrum of surgical specialties at the Alexandria Main University Hospital, and compare this current practice against the standard criteria from existing international guidelines for each emergency surgical procedure.

**Methods** This clinical audit was conducted over a 2 week period from January 3rd, 2022 to January 16th, 2022, on patients admitted to the Emergency Department (ED) at the Alexandria Main University Hospital, Alexandria University, Egypt. Patients indicated for emergency surgical intervention were included in this audit. All patients included were subjected to resuscitation in ED if needed, surgical specialty consultation and pre-operative assessments. DOOR- TO-OR time was defined as the time the patient entered the Emergency Department (DOOR), to time at entering the emergency operation room (OR). Data was collected using a standardised form and IBM SPSS 22 was used for statistical analysis.

**Results** to be presented

**Conclusion** Notify each surgical specialty unit about the audit results of their individual emergency surgical procedures. Discuss and identify the specific causes of delay in DOOR-TO-OR time for those procedures not complying 100% with the standard in team scientific meetings.

**Sarcoma Management in Nigeria and Pakistan: A Literature Review**

**W Wong, S Bandyopadhyay, H Zuberi, M Rafie Raza, A Nuhu Koko, N Peter, K Lakhoo**

**Aims** Sarcomas are a common type of childhood cancer. However, they are difficult to manage due to their heterogeneity and lack of defining features. Children with sarcomas in low- and middle-income countries (LMICs) have a high mortality. This review aims to assess whether difficulties in managing sarcomas are leading to higher mortality in two LMICs: Nigeria and Pakistan.

**Methods** A search was conducted in Medline and Embase for studies of sarcoma prevalence and management in Nigeria and Pakistan. Studies which reported data relating to bone and soft tissue

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sarcomas in paediatric patients were included.

**Results** Of the 235 articles identified, 32 met the inclusion criteria. In Nigeria and Pakistan, retrospective studies from regional tertiary centres suggested that sarcomas constitute an important proportion of solid malignancies in children. Rhabdomyosarcoma and osteosarcoma respectively were the most common soft-tissue and bone sarcomas reported in the literature. Few studies in either country reported survival or treatment outcomes in paediatric sarcoma patients. Significant challenges facing sarcoma management in these countries included the financial burden of treatment for patients and large patient numbers lost during follow up.

**Conclusion** This review has suggested that sarcoma management in Nigeria and Pakistan is influenced by a range of financial, social and infrastructural factors. However, the extent to which these factors affect the morbidity and mortality of sarcomas in LMICs, especially in children, is unclear. We have therefore developed and are implementing an international multicentre cohort study to investigate differences in management of paediatric sarcoma patients in the UK, Nigeria and Pakistan.

**Childhood Neuroblastoma Management in Bangladesh and Iran**

**M Khan, S Roy, S Bandyophadhyay, MS Sowrin, T Banu, K Lakhoo**

**Aims** Neuroblastoma is one of the commonest childhood malignancies in high-income countries (HICs). However, in low-and-middle-income countries (LMICs), its true incidence is unknown and high mortality rates are observed. Timely diagnosis and treatment have improved prognosis in HICs. It is unclear whether similar factors contribute towards increased mortality in LMICs. This review identifies the evidence for both diagnostic modalities and treatments available in two LMICs, Bangladesh and Iran, with a view to conduct a cross-sectional survey study.

**Methods** A literature review was performed on OVID MEDLINE. Papers were identified that presented the incidence, management and factors influencing access to diagnostic facilities and treatments. A literature search using the terms ‘Neuroblastoma’, ‘Bangladesh’ and ‘Iran’ was performed. These publications were analysed to present the foundational knowledge for conducting a survey study.

**Results** 52 publications were retrieved. They largely reported a low incidence of childhood neuroblastoma but were often detected at a late stage of the disease. There was a paucity of data on the treatments available and provided for children with neuroblastoma. A lack of data on access and utilisation of diagnostic facilities was also identified.

**Conclusion** Currently, there are limited published studies on neuroblastoma management in Bangladesh and Iran. To improve the survival rate in LMICs, it is essential to identify the key vulnerabilities within the health system. Partnerships with local collaborators can help bridge this knowledge gap through a cross-sectional survey study. This study would investigate the diagnostic and treatment capacity and document the facilities, costs, and referral pathways to tertiary centres.

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**Achieving Sustainability by Improving Pre and Intra-operative Practice in the Management of Suspected Testicular Torsion**

**E Okpii, F Adamu-Biu**

**Aims** To review pre and intra-operative practice in management of suspected testicular torsion.

**Methods** A retrospective review of patients' electronic records between 2018 – June 2022 was done. We reviewed urology documentation, available investigations and the operative notes. Only patients undergoing emergency scrotal exploration were included.

**Results** A total of 280 patient records were reviewed with the median age at presentation being 15 years. Our cumulative average diagnostic rate was 24% with 66 confirmed torsions. The youngest and oldest confirmed cases were 6 and 43 years respectively. Preoperatively, the decision to operate was not informed by clinical tools like Testicular Workup for Ischaemia and Suspected Torsion (TWIST) score or bedside investigations like urinalysis or PoCUS.

**Conclusion** Testicular torsion has an incidence of 3.8 / 100,000 in under 18-year-olds with many hospitals having a positive diagnostic rate of around 20% which translates into roughly 80% of avoidable surgeries. Processes that improve preoperative diagnosis of testicular torsion and hence improve pre-operative patient selection will invariably lead to less surgeries and inappropriate use of scarce resources. We advocate for utilisation of simple clinical tools like the TWIST score which has been validated in both the paediatric and adult population in predicting favourably the presence of torsion. The use of pre-operative investigations like urinalysis and PoCUS (Point of Care Ultrasound) will aid in improving pre-operative diagnosis and invariably proper patient selection for surgery. Utilisation of these modalities will help foster a sustainable approach to surgery, enable proper resource utilisation and avoid too many surgeries and their associated complications.

**Improving documentation during surgical ward rounds: Use of a Checklist**

**D John, R Mittal, MR Jesudasan, R Raghunatha, RP Sridhar.**

**Aims** The daily ward round is an essential component in managing a surgical patient. It allows for patient review, assessment and planning of care. Inadequate documentation during the surgical ward round can lead to errors in management and have medico-legal implications. A surgical ward round checklist can help minimise errors, improve efficacy and promote the smooth functioning of a surgical department. This quality improvement project depicts the usefulness of a surgical ward round checklist in improving documentation in the Colorectal Surgery Department of a tertiary care teaching hospital in South India.

**Methods** A 15-point ward round checklist was developed in consultation with surgical team members. A one-week pre-implementation audit was conducted on 90 patients using simple random sampling in November 2021 and the results were presented at a local departmental meeting. A post implementation audit on 79 entries, using 13 parameters as the final checklist, was conducted one week after the presentation to the department.

**Results** Six parameters showed significant improvement (>40%), and at least two or more parameters showed betterment (>20%) after the implementation of the checklist. Documentation of a diet Plan (pre-checklist=38% vs post-checklist=94%) was one of the areas which illustrated striking improvement.

**Conclusion** Documentation during surgical ward rounds improves with the introduction of a checklist. A checklist can lead to a reduction in errors and missing key aspects of patient care. For maximum effect, the surgical ward rounds checklist should be curated to the specifications of a speciality department.

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**Quitting opioid - a tough row to hoe**

**P Ramachandran Nair, R Kalaria, S Shanbhag, L Prasad**

**Aims** The global opioid crisis is resulting in humongous, yet avoidable consequences. Examples include increased healthcare and substance abuse treatment costs, lost productivity, and criminal justice consequences. It is about time that we seek sustainable pain management modalities. We aimed to explore the anaesthetists' perception of OPIOID FREE ANAESTHESIA (OFA) and the challenges of implementing the same.

**Methods** Following Trust Audit approval, a paper-based questionnaire was circulated among all grades of anaesthetists to gather a baseline picture of their knowledge about OFA, various drug options and/or infusions to achieve OFA and their willingness to use them. We also enquired about the perceived benefits and challenges of its introduction.

**Results** A total of 33 responses were obtained. 76% of consultants and 67% of middle-grade doctors had used OFA previously. 72% of consultants and 80% of middle-grade doctors were interested in limiting perioperative opioids. While more than three-quarters of both cohorts responded positively to the perioperative OFA infusion regime, 72% of consultants and 92% of trainees/fellows felt that such patients should be cared for in a monitored bed. The challenges perceived included training anaesthetists and recovery staff, post-operative monitoring, availability of drugs, pharmacy approval etc. Furthermore, patients with obesity, OSA and opioid hyperalgesia were voted to be candidates deserving OFA.

**Conclusion** OFA should be targeted at a select population of patients. The opiate-limiting approach is more practical than being opiate free. OFA paves a strong foundation of sustainable and innovative anaesthetic practice in solidarity with the efforts of anaesthetists and surgeons worldwide in addressing the opioid pandemic.

**A retrospective analysis of cholecystectomies performed in Brazil during the pandemic of COVID-19**

**LS Carvalho, MJ Oliveira, MEA Barbosa, STA Santos, IC Varão, ACM Silva**

**Aims** To analyse the number of cholecystectomies performed in Brazil during the COVID-19 pandemic period.

**Methods** Retrospective epidemiological study, which used secondary data from the Department of Informatics of the Unified Health System (DATASUS), between the period from 2019 to 2021. Procedures, federation units and hospitalizations were included. Data was organized in the Microsoft Excel 2016 software and a descriptive statistical analysis was performed.

**Results** There were 508,174 cholecystectomies performed, of which 57.1% were open cholecystectomies (n=290,403), 42.8% were by laparoscopy (n=217,027) and only 0.1% corresponded to the area of oncology (n=744). São Paulo was the state with the highest number of procedures (n=104,512), followed by Minas Gerais (n=45,172) and Rio Grande do Sul (n=40,886). The states with the lowest numbers were Roraima (n=458), Amapá (n=2,420) and Acre (n=2,455). In 2020, 134,511 cholecystectomies were performed; a decrease of 40.6% compared to 2019 (n=226,443). In 2021, 139,198 cholecystectomies were performed, an increase of 3.5% compared to 2020.

**Conclusion** As in other countries, the COVID-19 pandemic in Brazil impacted the number of cholecystectomies performed. It can be justified by the adoption of social isolation and the reorganization

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of the health system to combat the pandemic. The redistribution of health professionals and hospital beds is a contributing factor to the reduction of this number between 2019 and 2020. However, a modest increase between 2020 and 2021 may reflect an improvement in the situation.

**Surgical procedure's mortality rate in the Brazilian Unified Health System in the Amazon region from January 2021 to May 2022**

**CGG Any, SC Bruno, F Eduarda, GO Talini, SR Hendriw**

**Aims** The aim of this study was to find out the surgicals procedures' mortality rate in the Amazon region in Brazil, from January 2021 to May 2022, and compare with Brazil's rate.

**Methods** This is a cross-sectional and retrospective study with data from the brazilian Unified Health System (SUS) information of mortality rate. It looked at data from all surgical procedures and the subcategories listed between the letters surgery of the digestive system, adnexal organs and abdominal wall, from January 2021 to May 2022 in Amazon region in Brazil (which contains nine states). The values were found from the ratio between the number of deaths and the sector's hospitalizations during this period, multiplied by 100. From the rates obtained, state averages were calculated, resulting in the rate of the region, which was used for comparison against the rest of the country.

**Results** During the period studied, the mortality rate from surgical procedures in the Brazilian Amazon region was 1,243%, smaller than that of Brazil, which was 1,90%. Accordingly, in the subcategories chosen was 1,82% to 2,37% in Brazil. This difference can be explained by the socioeconomic disparities existing in Brazil, which would result in fewer highly complex procedures being performed in the Amazon compared with other regions.

**Conclusion** The regional disparity in the mortality rate in relation to the country is remarkable, suggesting the need to reallocate resources destined to improve the quality of the health service provided, especially those in underdeveloped regions that have a smaller number of highly complex procedures.

**Drawing The Triple Bottom Line : Sustainable Surgical Training in a post-covid era.**

**J Ross**

**Aims** The triple bottom line framework was developed to help organisations understand their broader impacts and consists of social, economic and environmental domains. This can be summarised by the 3 P's; People, Profit and Planet. By embracing this framework, we can move towards a more sustainable model of surgical training in order to provide excellent quality care for patients whilst minimising the environmental impact of operation theatres. To improve sustainability, organisations like the NHS must also ensure that they subscribe to ethical purchasing and avoid mismanagement of publicly funded projects. The aim of this project was to create a sustainable surgical anatomy training platform that improves accessibility, minimises cost and environmental damage, whilst ensuring that trainees get a more immersive and tailored surgical experience, without posing harm to patients.

**Methods** Data was gathered from interviews with 30 participants, comprised of medical students, junior doctors and surgical trainees. Participants took our neurosurgery skull-base course where they were able to explore the skull base in a mixed reality setting whilst having tactile models with pathological findings. Real patient's CT and CT-A scans were converted into digital assets that were 3D printed within hours and posted to the recipients around the world. I devised a kinaesthetic way for students to learn advanced skull-base surgical anatomy as well as procedural skills that are transferable to the operative realm.

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**Results** Kinaesthetic learning was deemed more intuitive by 93% of participants. 80% of trainees felt like they understood a more critical part of surgical anatomy, namely spatial relationships. This mode of training was extremely cost-effective whilst reducing solid waste and energy consumption. Equivalent operative demonstration of these principles would have caused approximately 750-1250kg CO2e, with major procurement of anaesthetic agents.

**Conclusion** In the UK, there is a colossal challenge ahead to enable surgery to achieve net zero carbon by 2045, in line with the Greener NHS strategy. We find that surgical simulation is an underutilised method for training surgeons and can bring a more sustainable future to surgical training on a global scale.

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**The effect of anatomical features of aneurysms on clinical outcomes following elective Endovascular Aneurysm Repair (EVAR)**

**O Akintoye, L Kim**

**Aims** The continuous high incidence of adverse outcomes following endovascular aneurysm repair (EVAR) of abdominal aortic aneurysm (AAA) has created the need to predict these outcomes in order to aid patient management. This study sought to explore the potential role of some pre-surgical aneurysm features in predicting adverse clinical outcomes following EVAR.

**Methods** A prospective cohort study that utilised the data of 661 patients from the UK EVAR 1 and 2 randomised controlled trials. For both trials, national ethical approval was obtained from the Northwest Multicentre Research Ethics Committee (MREC references 98/8/26 and 98/8/27). As there was no access to personally identifiable information on data access, additional ethical approval was not required for this study. The outcomes of interest were all-cause mortality, AAA-related mortality, graft-related complications, and reinterventions. The aneurysm features that served as exposures were aortic neck and sac length (NSL) and distal aortic neck diameter (DAND). Survival analysis using Cox proportional hazard regression models were utilised to estimate the associations between the exposures and outcomes of interest.

**Results** For every 1cm increase in NSL, there was an associated 7% increase in the rate of graft-related complication. The rate of reintervention also increased by 13% and 73% for every 1cm increase in NSL and DAND respectively. DAND and NSL were however, not observed to be predictive of all-cause death and AAA-related death.

**Conclusion** NSL and DAND are potential aneurysm anatomic features that could be used to predict post-EVAR adverse outcomes, though further research to validate these results are needed.

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**Local production of ethanol for WHO-recommended hand sanitiser formulation and its potential in low-income countries healthcare**

**Z Borawska**

**Aims** Covid-19 pandemic hand sanitiser shortages prompted local distilleries in high-income countries to switch from spirit production to alcohol-based hand rub manufacture using World Health Organisation-recommended formulations. Unofficial media testimonies also reported the production of hand rub based on home-made alcohol on an individual, although illegal, scale. Low-income countries (LICs) continue to struggle with access to appropriate cost-effective hand sanitisation in healthcare. The aim of the project

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was to explore the potential of using locally produced alcohol in hand sanitiser production in low-income settings.

**Methods** Literature search of existing LIC studies and media reports of using locally produced alcohol in hand sanitiser manufacture was conducted to appraise the existing evidence of the feasibility of the idea. The author interviewed a manager of a local distillery to explore the process and costs of ethanol production.

**Results** Although the evidence of the quality of such hand sanitiser is limited, there are reports of a small-scale local production of ethanol from substrates such as fruit or food waste and its use in hand rub formulations in LICs. The process of ethanol production is straightforward and does not require expensive equipment or substrates, providing a potential source of hand sanitiser substrate.

**Conclusion** The issues of regulation, quality control and cost-effectiveness of local ethanol production should be explored further in the context of hand sanitiser production. However, as an initial idea, local production of ethanol for hand sanitiser in LICs has a great potential to meet the demand and boost local economies, making them less dependent on import.

**Mortality on kidney transplants and impact of the COVID-19 pandemic: a retrospective cohort study**

**JO Castro, SH Vitte, MRCS Reis, JVQ Almeida**

**Aims** To evaluate factors related to mortality on kidney transplants after listing as well as the impact of the COVID-19 pandemic

**Methods** This is a retrospective cohort study using the Scientific Registry of Transplants Recipients as a database of the US Department of Health and Human Services (HHS). Mortality after listing and covariates to plot were analysed using hazard ratio, in addition to the impact of the COVID-19 pandemic on kidney transplants mortality after listing.

**Results** Evaluating kidney transplant's mortality after listing for a period of follow up of 6-7 years, we found that a measure of albumin < 4 g/dL and BMI < 30 kg/m^2 were protective factors. Factors associated with higher death were patients with primary diagnosis of vascular causes (HR 1.1) on the list, while diabetes (HR 1.0) had similar mortality between groups. The access to kidney transplantation in the United States is determined by the economic status of patients, in contrast to other countries that provide free healthcare. The COVID-19 pandemic progressed, and although the number of transplants decreased less than expected, mortality on patients that have been waiting 5+ years for a transplant had an increased baseline for deaths per 100 persons-year, going from 15 when it started to 17.5 deaths/persons-year deaths after 22 months, which may be an impact of the economic recession caused by the pandemic.

**Conclusion** Mortality rates were increased in kidney transplant populations with the pandemic, likely caused by the economic recession.

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**Breast cancer surgical treatment in Brazil: an ecological study**

**JVQ Almeida, JO Castro, SH Vitte, MRCS Reis, JHK de Souza**

**Aims** To evaluate malignant breast cancer surgical treatment time gap from the moment of diagnosis until treatment in the 5 Brazilian geographic regions, according to region and age.

**Methods** Ecological descriptive study based on a nationwide information base provided by the Department of Informatics of the Brazilian Unified Healthcare System (DATASUS, portuguese acronym). The following information of the oncological panel of the database, last updated on July 15, 2022, was collected: time from diagnosis until treatment; age; and region of diagnosis. We collected data from 2013 until 2022, with all data available at the platform.

**Results** After confirming breast cancer, according to the Brazilian law 12.732/2012, the treatment must be done in at least 60 days. We observed that 64.7% of the women from the Southeast region, 77.8% from the South, 68.9% from the Midwest, 59.8% from the north, 74.9% from the northeast, received surgical treatment in, at least, 60 days. In relation to age, patients over 40 had more breast cancer.

**Conclusion** The Brazilian Public Service of Health is capable of attending to most of its patients. The access to surgical treatment is according to the needs of each region, with the ability to offer surgical approach, most of the time according to stabilised time. Besides, we know that delay of treatment for more than 90 days is related to stage migration. We concluded that treatment of breast cancer, even in low socio-economic areas, is done in opportune timing.

**Spontaneous heterotopic pregnancy resulting in tubal rupture and complete spontaneous abortion: a case report in Tiko, Cameroon**

**BD Takoutsing, G Endalle, A Sow, D Ofon, N Vera, A Fontem**

**Aims** To present a case report of the management and early outcome of a first trimester spontaneous heterotopic pregnancy (HP) in a low-resource setting.

**Methods** This piece of work has been reported according to the Surgical CAse REport (SCARE) guidelines.

**Results** A 24 years old G2P0010 at 11 weeks of gestation with a history of one induced abortion and a family history of twin pregnancies presented with an acute abdomen, associated with vaginal spotting in an afebrile context. Recurrence of the vaginal spotting and increase in the severity of the abdominal pain prompted an obstetrical ultrasound which showed retained products of conception, as well as the presence of a left adnexal mass suggestive of an extrauterine gestational sac at approximately 6 weeks of gestation. There was spontaneous expulsion of retained products of conception. The deterioration of the haemodynamic stability of the patient prompted an emergency laparotomy to be done under general anaesthesia after a repeat ultrasound suggestive of a ruptured left ectopic pregnancy (EP). Evacuation of 700ml of dark-red haemoperitoneum and salpingectomy were done, with subsequent optimisation of the patient. The patient was transfused, post-salpingectomy counselling done and was discharged on oral analgesics, blood tonics and antibiotics on day 6 post-operation.

**Conclusion** HP should be suspected in first trimester bleedings especially if associated with an acute abdomen. An ultrasound should be performed in all patient presenting with clinical manifestations of abortion to help in the early diagnosis and treatment of a concurrent EP. Laparotomy is relatively safe in the context of abortion and shock secondary to haemoperitoneum.

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**The Place of 18F-FDG PET/CT in the Diagnosis of Lung Cancer and Correlation with Histopathological Results**

**A Ibrahimli , A Yildiz , OF Alisan, I Tacyildiz, NO Kucuk**

**Aims** Lung cancer ranks first in cancer-related deaths. One of the most important imaging methods in the diagnosis, treatment and follow-up of lung cancer is 18F-FDG PET/CT. The aim of our study is to determine the sensitivity and specificity of 18F-FDG PET/CT in lung cancers and to reveal the relationship of lung cancer with age, sex, smoking, localization and histopathological methods used for diagnosis.

**Methods** 1173 patients who underwent 18F-FDG PET/CT with diagnosis or pre-diagnosis of lung cancer were examined at Ankara University Faculty of Medicine Department of Nuclear Medicine between January 2019-July 2021 and 552 patients were included in our study, 621 patients were decommissioned due to lack of histopathological examination. Of the patients included in this study, 137 (24.8%) were female and 415 (75.2%) were male. The mean age of all patients was 64.8 ± 10.5 (17-97) years. The data of these patients was evaluated retrospectively.

**Results A**ccording to the histopathological results of these patients, no neoplasia was detected for 126 patients (22.8%); 154 patients had adenocarcinoma (27.9%), 111 had squamous cell carcinoma (20.1%), 56 had poorly differentiated adenocarcinoma (10.1%), 51 had small cell carcinoma (9.2%), 10 had large cell carcinoma (1.8%), 14 had metastasis from different organs (2.5%), 30 had other pathologies (5.4%).. The false positive rate of 18F-FDG PET/CT was 14.1% and the false negative rate was 1.51%. The sensitivity, specificity, positive predictive value, negative predictive value, and accuracy rates of 18F-FDG PET/CT in detecting lung cancer were found to be 98.4%, 85.8%, 94.6%, 95.7%, and 94.9% respectively. The presence of lung cancer in 18F-FDG PET/CT was found to be statistically significant ($p<0.001$, $p=0.002$).

**Conclusion** We believe that 18F-FDG PET/CT should be used routinely together with histopathology in the diagnosis of lung cancers and may be sufficient on its own.

**Clinical-pathologic characterisation and survival of children with bladder tumours at Uganda Cancer Institute - a retrospective study**

**C Namugenyi, P Kisa, JK Balagadde**

**Aims** Paediatric bladder tumours are a rare entity worldwide and their clinical pathologic characteristics differ from those in adults. In Uganda, these characteristics have not been studied yet survival has been anecdotally reported to be poor at Uganda Cancer Institute (UCI). This study proposed to describe the clinical-pathologic characteristics and determine survival among children with bladder tumours at UCI. This will help to guide treatment at UCI and improve overall survival.

**Methods** A retrospective chart review of children with histologic diagnosis of bladder tumours between January 2009 and January 2020 registered at UCI was conducted. Clinical pathologic characteristics and treatment given were abstracted and analysed. Survival was analysed as time from histologic diagnosis to death. Kaplan Meier survival function was used to calculate the monthly event probabilities, median survival time and yearly survival rate.

**Results** There was a bimodal age distribution with peaks at 3 and 16 years. The median duration of symptoms at admission was 56 days (IQR=48). Most common symptoms were haematuria (65.9%); followed by abdominal mass (61.4%). The predominant histologic type was Rhabdomyosarcoma (65.9%): while urothelial tumours accounted for 13.6%. Of the 44 patients, 19 (43.2%) died; the remainder were

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either alive 12 (27.2%) or lost to follow-up 13 (29.5%) and were subsequently censored. Overall, the median survival time for all paediatric bladder tumour patients was 38 months. Survival at 1, 3, and 5 years was 58.3%, 55.5% and 47.2% respectively.

**Conclusion** Most children with bladder tumours presented with gross haematuria and an abdominal mass with the most predominant histologic type as Rhabdomyosarcoma and low grade. An initial presentation with gross haematuria, early stage, low grade, urothelial tumours and combination treatment modality were associated with higher survival probabilities. However, overall, the 5 year survival rate was lower than that previously reported in other settings. Therefore, we recommend that all children with bladder tumours should have protocolled treatment to improve 5-year survival.

**Assessment of surgical anaesthesia and obstetric workforce providers in Somalia**

**M A Omar**

**Aims** To determine the number and distribution of surgical anaesthesia and obstetric (SAO) care providers (both qualified and practitioners); and to establish the patient SAO care provider ratio in Somalia.

**Methods** This was a cross-sectional study design using quantitative data. The study was conducted in health facilities of 2 Administrative zones of Somalia (Northeast known as Puntland and South/central). The Surgical Assessment Tool (SAT) (categories used: General Questions and Workforce Assessment Questions) was used for data collection.

**Results** 55 health facilities participated. The study results indicate that most of the SAO providers were in the Benadir state (57%) (Puntland (13%), Southwest (10%), Galmudug (8%), Jubaland (7%), and Hirshbelle(5%)). Most SAO providers were midwives (309) (MBBS providing surgery 127, nurse anaesthesia 89, foreign provider 82, consultant surgeon 67, O&G consultant 54, MBBS providing anaesthesia 49, biomedical 34, orthopaedic consultant 26). Other SAO providers were consultants from the following specialties: radiology, ENT, anaesthesia, and ophthalmology, urology, pathology, neurosurgery, cardiothoracics, cardiology and paediatric surgery. Finally, there were no consultant SAO providers from the following specialties: oncology, gastroenterology, or paediatric anaesthesia. The highest number of SAO providers worked in urban areas (874), whilst rural SAO providers numbered 75. All the states in Somalia had a lower SAO provider:population than the goal of 20 SAO providers for every 100,000 persons set by the Lancet Commission on Global Surgery. Benadir had the highest SAO provider:population (16:100,000) followed by Puntland (7:100,000), Jubaland (5:100,000), Hirshebelle, and Galmudug (3:100,000) and South West (2:100,000). It is worth noting that the Benadir region is home to the capital, Mogadishu. The national average was 6:100,000. The actual number of health employees (of all types) in Somalia is unknown.

**Conclusion** This study demonstrates that there is a deficiency in Somalia's SAO workforce and that it is still a neglected topic. Currently, the workforce required to meet the needs of the population is not present. In several regions of the country, the hiring of expensive foreign labour helps alleviate the shortage of local health professionals. LMICs have formulated an increasing number of National Surgical, Obstetric, and Anaesthesia Plans (NSOAPs) to address the health burden of conditions requiring surgery. These plans emphasise the importance of an ongoing global commitment through partnerships, the expansion of the health workforce, and improved information management.

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**Effect of drotaverine hydrochloride and valethamate bromide in shortening first stage of labour in a primi mother**

**P Guha Sarkar, T Bera**

**Aims** The primary aim was to evaluate the effect of drotaverine and valethamate in shortening the first stage of uncomplicated labour at term in primi mothers. Our secondary objectives included ensuring foetal and maternal well-being, and to note any side-effects or complications arising during the study.

**Methods** This was a prospective interventional study carried out at a district general hospital in India, over 1.5years. The study population included 300 antenatal women who fulfilled inclusion criteria. All women were primigravidae, at term, with singleton pregnancies in cephalic presentation, in established labour. They were divided into control, drotaverine and valethamate groups. We administered the corresponding antispasmodic in the active phase of labour and assessed progress of labour, development of any adverse effects, maternal, foetal and neonatal well-being. Ethical committee approval and informed patient consent was obtained prior to commencing the study.

**Results** Our analysis showed that both drotaverine and valethamate significantly shortened the first stage of labour, with drotaverine being more effective than valethamate. The pharmacological doses of these drugs were not associated with maternal, foetal or neonatal adverse effects. These results were comparable with other studies carried out in similar settings.

**Conclusion** We concluded that drotaverine and valethamate are cost-effective labour analgesia options, which effectively shorten labour without any significant adverse events or altering the rate of uncomplicated vaginal deliveries. These results were particularly relevant in the under-resourced setting of a district hospital in India, where labour augmentation using oxytocin could not be safely facilitated due to lack of continuous electronic foetal monitoring and epidural analgesia.

**Endoscopic third ventriculostomy vs ventriculoperitoneal shunt insertion for the management of paediatric hydrocephalus in African centres: A systematic review and meta-analysis.**

**DA Jesuyajolu, A Zubair, A Nicholas**

**Aims** Ventriculoperitoneal shunt insertion (VPS) and endoscopic third ventriculostomy (ETV) are common surgical procedures used to treat paediatric hydrocephalus. There have been numerous studies comparing ETV and VPS, but none from an African perspective. In this study, we sought to compare outcomes from African neurosurgical centres and review the associated complications.

**Methods** The Preferred Reporting Items for Systematic Reviews and Meta-Analyses were used in conducting this study. PubMed, Google Scholar, and African Journal Online were searched. Data on treatment successes and failures for ETV and VPS were pooled together and analysed with a binary meta-analysis. A clinically successful outcome was defined as no significant event or complication occurring after surgery and during follow-up (e.g infection, failure, CSF leak, malfunction, and mortality). Seven studies fully satisfied the eligibility criteria and were used in this review.

**Results** There was no statistically significant difference between the outcomes of ETV and VPS (Odds Ratio (OR) 0.27; 95% CI -0.39-0.94, p=0.42). After reviewing the rates of complications of ETV and VPS from the identified studies, 4 were recurrent. The infection rates of ETV vs VPS were 0.02% vs 0.1%. The mortality rates were 0.01% vs 0.05%. The reoperation rates were 0.05% vs 0.3%, while the rates of ETV failure and shunt malfunction were 0.2% vs 0.2%.

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**Conclusion** This study concludes that there is no significant difference between the outcomes of ETV and VP shunt insertion.

**Nitrous Oxide emissions – Overcoming barriers to waste mitigation**

**J Harris, A Chawla, N Rice, N Kennedy, R McKenna, A Nayeck**

**Aims** The global warming potential of nitrous oxide (N2O) is 298 times that of carbon dioxide. N2O comprises 75% of UK anaesthetic emissions, contributing heavily towards global climate breakdown. Mitigating N2O emissions nationally remains challenging due to complex pipeline networks, lack of accurate record-keeping, theft, and fragmented managerial oversight. We sought to quantify and mitigate high levels of inefficiency at our site.

**Methods** Process mapping was performed. N2O delivery at anaesthetic machines was measured in 11 theatres over 2 weeks to estimate clinical administration. At the manifolds, handwritten cylinder supply logs were also scrutinised. Pipeline leak testing was undertaken and five leaks repaired. Clinical use was then re-measured and cylinder consumption was monitored for 3 months hence.

**Results** Over one year, 210 N2O cylinders were consumed, totaling 1,882,800litres(L). In the three months following leak repairs, manifold logs showed use of 333,000L, totaling 1,332,000L annually; a 29.3% reduction in cylinder turnover. Clinical N2O was stable pre- and post-repairs, estimated at 86,268L/year and 102,102L/year respectively.

**Conclusion** At our site, establishing a collaborative network with pharmacy and estates divisions permitted a multi-disciplinary approach to mapping and interrogating the existing infrastructure. Following pipeline maintenance, significant and costly system loss still remains, highlighting the multitude of factors involved. We now intend to replace the N2O pipeline with cylinders mounted at the point of use, circumventing wasteful processes. This could reduce consumption by 1,230,000L annually, saving £11,333 and eliminating emissions equivalent to 725 tonnes of carbon dioxide per year.

**Enabling sustainable access to safe surgery in rural Africa through technology enhanced supervision. Lessons from Malawi, Zambia and Tanzania**

**C Pittalis, J Gajewski, on behalf of the SURG-Africa consortium**

**Aims** 5 billion people lack access to safe surgery; the majority of them live in rural areas in developing countries. District-level hospitals (DLHs) should offer surgical care for rural populations in sub-Saharan Africa but lack capacity. The SURG-Africa project aimed to strengthen the surgical capacity of district hospitals in Malawi, Tanzania and Zambia.

**Methods** The intervention comprised regular visits to 31 DLHs by specialists from referral hospitals; and a mobile phone-based network for real time consultation. Mixed-methods controlled design was used to monitor changes in a range of indicators. Ethical approval was duly received.

**Results** The visits improved surgical output (numbers and range of major cases) and surgical, anaesthesia and nursing skills of the local surgical teams in most participating facilities (detailed analysis underway). The consultation network reduced surgical referrals by 30% (stopping unnecessary referrals) and improved the quality of case management (two consultants advising on every case posted). In 75% of cases discussed remotely with surgical supervisors, management decisions were reached within less than one hour.

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**Conclusion** Rural populations in Africa lack access to surgical specialists, who mainly practice in urban areas. Periodic visits by surgical specialists to DLHs, enhanced with regular contact via the consultation network, are producing substantial patient and population benefits. In the immediate term this service model can offer a sustainable solution to improve access to care for underserved populations. The team engages with local actors aiming for national scale-up of the model. Lessons learned will be transferred to the wider region.

**Understanding childhood abdominal tuberculosis through patients' experiences: A community engagement initiative**

**R Jain, S Joh, B Kaur, V Michael, A Suroy, D Ghosh**

**Aims** Community engagement and involvement identifies and involves local communities to collaborate in identifying research priorities, planning implementation strategies and disseminating research outcomes. The abdomen is the second most common extrapulmonary site for tuberculosis (TB). We tried to capture the patient's journey from the first symptom to recovery, aiming to identify the dissemination pathway for clinical data to key stakeholders within the community.

**Methods** Nine former patients and their families were asked about their experiences during treatment of abdominal TB. An identified nurse who was involved with their care during the hospital stay conducted these interviews. A semi-structured script guided the interview. Conversations were recorded, transcribed and translated. Due to the Covid-19 pandemic most interviews were by telephone and in the local language.

**Results** Experiences, thoughts and concerns of patients and caregivers revealed worry about their child's health, their future, caring for and supporting the rest of the family as well as a sick child which involved the burden of out-of-pocket health expenditure. The children themselves had to endure months of severe pain and stigma.

**Conclusion** Involvement of communities is new for surgical researchers in the global south with little reported evidence of the impact this may have on the outcomes of research. Exploring the experiences of patients' families has provided direction on the importance of involving the end-user in research for example we found that the main barrier to treatment was misdiagnosis rather than late presentation. Patients are the key stakeholders and should be involved from the beginning in research and dissemination of findings.

**Prevalence, indications and outcomes of hysterectomy in the south west region: A 7-year multi-centric retrospective study**

**TW Ntchompbopughu, OA Clinton and EO Thomas**

**Aims** This study determined the prevalence, indications and outcome of hysterectomy at 4 hospitals in the south west region of Cameroon.

**Methods** We conducted a cross-sectional study with a retrospective collection of data on the prevalence, characteristics, and outcome of hysterectomies performed at the Buea and Limbe Regional Hospitals, Baptist Hospital Mutengene and Kumba District Hospital from 2015-2021. Bivariate and multivariate regression analysis was performed to estimate predictors of morbidity and length of hospital stay.

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**Results** The prevalence of hysterectomies for major gynaecological operations was 18.7%. Symptomatic uterine fibroids (60.4%) and cancer of the uterus (12.5%) were the commonest indications. Total abdominal hysterectomy (TAH) was the most common approach (87.5%). The post-operative morbidity rate was 43.8% (42.9% associated with TAH) and the hospital mortality rate was 2.6%. Intra-operative complications [Adjusted Odds Ration(AOR)=4.46 (1.63-7.36), p<0.001], hysterectomy performed by a non-gynaecologic surgeon [AOR=2.57 (1.22-5.40), p=0.013], and vaginal hysterectomy [AOR=0.169 (0.05-0.73), p=0.018] were associated with higher post-operative complications. Intra-operative [AOR=5.9 (1.9-18.3), p=0.02] and post-operative complications [AOR=6.7 (3.2-13.9), p<0.001], and radical hysterectomy [AOR=10.5 (1.3-83.7), p=0.026] were found to be associated with a prolonged hospital stay.

**Conclusion** The prevalence of conventional hysterectomies for major surgical operations in our setting is high, and has multiple indications. Minimally invasive hysterectomy techniques are uncommon in our setting. The rate of post-op morbidity is high with varied determinants, and the hospital mortality rate is low.

**Comparing management modalities and outcomes of burn injuries in Douala General Hospital and Buea Regional Hospital: a 5-year retrospective study**

**TW Ntchompbopughu, AO Yves, NDM Mokake, and EP Weledji**

**Aims** To compare the management and outcomes of burn injuries at the Douala General Hospital (DGH), a specialised burn centre, and the Buea Regional Hospital (BRH), a non-specialised burn centre. Both are situated in Cameroon.

**Methods** We conducted a cross-sectional study with a retrospective collection of data on management and outcome of all burn injury patients admitted at the BRH and DGH between 2017 and 2021.

**Results** The commonest intravenous fluids used were Ringer's Lactate (69.6%) and normal saline (52.2%) at DGH and BRH respectively. When an antibiotic was required, Amoxicillin (19.7%) and Oxacillin (50%) were mostly used at DGH and BRH respectively. Paracetamol and tramadol hydrochloride were the most common analgesics used in both centres. The use of anti-tetanus serum was more common at DGH (61.6%) as compared to BRH (13%). DGH received more cases of severe burns (TBSA<10%), 76% (115/151) than BRH, 52% (24/46). Thus, the most common surgical treatment at the DGH was amputation (7.0%) as compared to debridement at BRH (17.4%). The overall mortality rate due to burns was strikingly higher at DGH, 36.4% (55/151), with mortality due to severe burns of 45% (52/115), as compared to BRH, 8.7% (4/46) and 16.7% (4/24) respectively. Sepsis, and wound infections were the commonest complications reported in both hospitals.

**Conclusion** The choice of medical treatment at both centres was similar. The use of anti-tetanus serum was uncommon at the non-specialised centre. The type of surgical treatment differs between both centres. Complications were common at both centres and mortality was higher in the specialised centre.

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**Assessment of sarcopenia as predictor of anastomotic leak in colorectal surgery, its relevance compared to other indicators of leak and its overall clinical impact on the outcome**

**S Ahmed, K Goyal, M Abbaker, J Wilson, C Magee**

**Aims** Preoperative low skeletal muscle mass and density are associated with increased postoperative morbidity. Sarcopenia, a condition characterised by loss of muscle mass, strength, and function, is currently identified as a marker of frailty, and malnutrition. In this study we aim to investigate the relationship between sarcopenia, anastomotic leak and other complications in colorectal surgery.

**Methods** A retrospective case control study on patients underwent resection and anastomosis for different colonic pathologies at UK based hospital between January 2016 and December 2020. PML3 (Psoas Major:L3 vertebral body) ratio was assessed in these patients and the relation with anastomotic leak, surgical outcomes and different variable linked to anastomotic leak was studied.

**Results** Out of 633 total patients, 383 had a right hemi-colectomy. The anastomotic leak % in all types of operations was approximately 8%. Only 122 patients (19%) were sarcopenic. In patients who had right hemi-colectomy, the relationship between sarcopenia and anastomotic leak was not statistically significant (p value=0.592). However, we found a strong relationship with: anastomotic leak and National Emergency Laparotomy Audit (NELA) score (p value 0.003), post op TPN (p value 0.001) and CRP on post-operative day 3 (D03) (p value=0.004). Looking at variables linked to sarcopenia we found an association with BMI (p value=0.002), functional status (p value=0.016), NELA score (p value=0.019) and NG feeding (p value=0.049).

**Conclusion** In patients undergoing right hemi-colectomy, sarcopenia is closely related to advanced age, low BMI and poor functional status. However, the preoperative assessment of sarcopenia is inferior to the pre-operative NELA assessment and post-operative D03 CRP in predicting the incidence of anastomotic leak.

**Surgical instrument wrap: A pilot recycling initiative**

**D Rooney, L Linehan, C Burke**

**Aims** The primary aim of this study was to pilot the implementation of a recycling initiative for surgical instrument set wrapping in an operating theatre in Ireland. Secondary aims included measurement of the quantity and surface area of surgical wrap diverted from general waste to recycling streams over a one-month period and estimation of the carbon emissions that could be avoided annually because of this diversion.

**Methods** Multiple stakeholders including hospital management, theatre nursing staff, theatre porters and waste management were involved in this project's implementation. We prospectively quantified the amount of polypropylene surgical wrap generated by a single gynaecology theatre at Cork University Maternity Hospital over a five week period, from 24/1/22 to 1/3/22. At the end of the study period, individual sheets of polypropylene wrap were counted and dimensions were measured to calculate the total surface area of surgical wrap saved for recycling.

**Results** 66 surgeries were performed over our study period. 221 individual sheets of surgical wrap were collected, equating to 282.1m2 of polypropylene. We estimate that 11,488m2 of surgical wrap could be recycled annually from our gynaecology theatre with an associated annual carbon emissions saving of 1.2 tonnes of CO2.

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**Conclusion** Diversion of surgical wrap from general waste and hazardous waste streams to the recycling stream is something that is achievable, with some planning, in every operating theatre. We have shown that small changes to operating theatre waste disposal practices have the potential to yield significant reductions to theatre waste outputs and to hospital carbon emissions.

**Transanal endoscopic operations (TEO) for benign rectal lesions and early rectal tumours: A single centre case-series study**

**H Imtiaz, A Abdelmabod, C Richards**

**Aims** The Transanal Endoscopic Operation (TEO) is a minimally invasive surgical technique, used for the excision of benign and selected malignant lesions (T1). The gold standard for rectal tumours is Total Mesorectal Resection, which comes with significant morbidity and mortality. We studied a case series of patients undergoing TEO surgery for benign and malignant lesions in the past 5 years, to study its safety and effectiveness.

**Methods** Retrospective collection of data of patients who underwent a Transanal Endoscopic Operation (TEO) in the past 5 years.

**Results** A total of 31 TEO procedures were performed. Overall, 3 (9.6%) patients developed postoperative complications. The median length of stay was 1 day. The 30-day and 90-day mortality were 0%. 7 patients did not have a pre-op histology done. 14 were benign pre-op. Among these, 3/14 had malignant post-op histology. Overall post-op histopathology showed 15 malignant lesions. 13 (87%) achieved R0. 1 case had local recurrence.

**Conclusion** TEO is a safe, effective, organ-sparing approach for select rectal lesions. Various cost-analysis studies show that despite the initial high cost of acquiring TEO, the overall cost per case is considerably lower than other radical approaches [2] (like APER or Anterior Resection), largely in part due to reduced morbidity/mortality, lower complications and length of hospital stay. According to the one study, a cumulative sum (CUSUM) analysis, the authors concluded that the learning curve for TEO was 17 cases. According to the one study, a cumulative sum (CUSUM) analysis, the authors concluded that the learning curve for TEO was 17 cases. Interestingly, few benign pre-op lesions had a malignant final pathology result. This highlights another advantage of TEO, allowing excision of large benign appearing lesions that sometimes may not be possible to excise using snare. We believe that TEO offers an attractive, sustainable, cost-effective alternative to radical surgery.

**Uptake and use of a mobile health application for peri-operative care in a Low Middle-Income Country**

**S Bhaloo, W Waweru-Siika, V Mung'ayi, J Shah**

**Aims** To assess the usage of a mobile health application for peri-operative care at a tertiary hospital in Nairobi, Kenya.

**Methods** A mobile health application was developed for IOS and android platforms for patients to download onto their smartphones after attending the pre-operative anaesthesia clinic at Aga Khan University Hospital; Nairobi Kenya. The application consisted of information about anaesthesia and provided a platform for the patient to send queries via text messages to the anaesthetist.

**Results** 39 patients between January and May 2019 received the mhealth app with females accessing the

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application and using the chat service more than males. Most of the patients viewed the app only once while there was one patient who viewed the content of the app 26 times. The estimated median number of views was 3.5 IQR(2-7.5) times.
In the Mhealth group some of the comments made included: 'wonderful platform, 'more information needed,' 'easy to use' and 'difficulty downloading app due to network.' Two patients refused to download the app and cited reasons such as minimal space on their smartphones.
Questions that patients asked via the chat services followed the themes of questions surrounding: duration of the procedure, post-operative sore throat, post-operative back pain, the need for a urinary catheter post operatively and advice regarding post-operative analgesics.

**Conclusion** Young females appeared to access the health app more than their male counterparts. Smartphones can be tapped as platforms for health-related interventions in Kenya.

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## Essay prize

The GASOC International Conference 2022 Essay Prize was kindly sponsored by Friends of Nepal Ambulance Service (FoNAS). They set the essay title and selected the winning entries.

# WHAT ARE THE CHALLENGES FACING THE DEVELOPMENT OF A PRE-HOSPITAL CARE SERVICE IN A LOW-RESOURCE SETTING?

**Winning Entry:** Elizabeth Westwood

**Second Place:** Brenda Narice

**Third Place:** Holly Eadsforth

### Winning Entry: Elizabeth Westwood

**Pre-hospital care is a vital component of a holistic and effective healthcare system, and it is not possible to achieve sustainable development without it. Many of the key indicators within World Health Organisation (WHO) Sustainable Development Goal (SDG) 3, such as improvement of maternal and neonatal mortality, deaths from non-communicable disease, as well as injury from road traffic accidents require time sensitive intervention[1]. Given that the burden of this morbidity and mortality globally falls heaviest on the poorest and most resource depleted areas, the importance of pre-hospital care in these settings cannot be underestimated. Despite this, many countries lack comprehensive pre-hospital care services[2].**

**INTRINSIC CHALLENGES**

**Revenue streams and where to direct the flow**

Much of the literature in this area equates resources with GDP via low-middle income (LMIC) status. Whilst defining “low resource settings” purely through financial parameters may arguably be a narrow measure of value, the reality is that comprehensive pre-hospital services have large financial costs. Funding is one of the most frequently cited barriers to pre-hospital care[2,3]. Upfront costs of equipment, vehicles and medical supplies as well as replenishment of consumable stock, routine maintenance, fuel, wages and training can rapidly outstrip the stretched budgets of less wealthy nations. Whilst the UK derives funding for ambulance services through taxation, many other revenue streams are in use globally – public/private partnership, individual or community-based insurance schemes, co-payment, international aid and charitable donation all contribute to varying extents. Choice of funding system significantly influences accessibility so care must be taken to ensure decisions do not marginalise lower socioeconomic groups with the highest need[4].

Regardless of funding source, resource strapped services must provide maximal impact for minimal cost. Whilst many costs are unavoidable, budget sensitive initiatives such as the innovative use of motorcycle ambulances in areas where many already present informally in this way, are being explored. Community first aid training targeting taxi and bus drivers has also been shown to significantly increase the number of patients arriving at hospital having at least received basic first aid, whilst also increasing engagement, awareness, and trust generally in the community[2].

**Standardisation, Structure and Leadership**

Finding the right mix of provisions for each community's means and needs is a key challenge for any would be service leader. Yet many countries lack a leader or single unified organisation to grapple with these problems. This leaves individual localities, private firms, or non-government organisations to fill the gap. Whilst locally tailored solutions are important, this level of fragmentation inevitably leads to inequality, poor coordination and access issues. 31% of countries surveyed by the WHO in 2009 did not have a single designated emergency phone number. Patients wishing to receive help often need to know the individual contact number of the ambulance driver, who may or may not have any medical training, and may opt instead for non-medical transport such as taxis. Fragmented service provision is also a barrier to quality dispatch and triage services – preventing the most efficient use of any resource that is available[3]. Uniting organisations under shared governance pools resources, creates accountability and simplifies services - improving public awareness and up-take[4]. A unified service also opens the door for establishing national regulation, guidelines and standardisation of training for emergency responders, who are the heart of any organisation[3].

## EXTRINSIC CHALLENGES

Much of the difficulty in provision of effective pre-hospital care comes from its inherent reliance on factors outside its direct control. Transport and communications infrastructure, socio-political stability, military conflict, and often vast and geographically complex landscapes with large seasonal variations pose a diverse range of challenges. Progress in many of these areas is directly dependent on broader development successes, and so these wider goals must be championed simultaneously if pre-hospital care is to flourish.

**SDG 16 - Peace, Justice and Strong Institutions**

Unrest threatens the continuity of basic foundations like funding and supply chains. It also increases demand for services and creates casualties of workers themselves. As well as being caught unintentionally in the crossfire, healthcare workers are too often direct targets. Safeguarding Health in Conflict report 126 fatalities among emergency medical responders globally, with 241 incidents of health supply looting and 74 health vehicle hijackings between 2016-20[5]. If the human impact of violence was ever at risk of being often lost in scale and statistics, it can be found in abundance in Mohammed Jabaly's award winning documentary "Ambulance", depicting the turmoil of those living and working in Gaza through the conflict of summer 2014[6].

Sadly, violence against healthcare workers is not limited to the confines of war – 39% of Pakistani emergency healthcare workers reported experiencing violence at work, and in Chile, 47% of paramedics reported verbal abuse and 18% experienced mobbing at work[7,8]. Despite the prevalence of abuse and the protection of medical personnel and infrastructure under international law, few of these crimes are brought to justice. There is long way to go in improving this picture, and a multilateral approach is required.

**Geography, Infrastructure and Logistics**

It has been shown that for every 10% further a patient is from a hospital, mortality increases by 2%[3]. Many communities live far from healthcare facilities. Remote and rugged geography makes reaching these people difficult especially when extreme weather renders roads impassable. HEMS has revolutionised coverage of many remote regions. However, if use is not properly integrated and triaged, it risks becoming a hindrance rather than a help[9]. Even when roads are passable, poor quality infrastructure causes critical increases in transfer times as well as posing a direct danger in itself. Whilst urban populations may be closer to a hospital, traffic is often heavier and for those who do travel by ambulance, conventions for giving way are not always respected[3].

**Disaster Response and the Consequences of Climate Inaction**

In a mass casualty event victims exceed resources, creating a shift in focus from optimal care for each individual, to achieving the greatest good for the greatest number. Situational awareness and strategic allocation of resources becomes paramount. These events pose the ultimate test of resilience, as pressure from every one of the barriers discussed above doubles down simultaneously. Strain on the system in these situations is reflected in figures for mortality – more than three times as many people die per disaster in low compared to high income countries[10]. Effective responses draw on the skills not only of pre-hospital teams but of all allied emergency services. Seamless coordination between police, fire and rescue services and the military, as well as external agencies is essential, but whilst international intervention is often required, the WHO themselves re-iterate that "the most timely and cost effective response to trauma is the one mobilised by the affected country"[11].

The specifics of how each disaster unfolds are unpredictable, preparedness exercises can be utilised to refine responses where there are known risks but prevention is always better than cure. Unfortunately, the likelihood and severity of real life run-throughs is becoming ever greater as a result of climate change[12]. As I finalise this essay more than 33 million have been displaced this week during one of the worst monsoons seasons ever seen in Pakistan. Roads, bridges, crops and livelihoods have been washed away, and 1000 Fatalities have been confirmed, with many more injured or likely to suffer ill health as a result of flood conditions[13]. The fall out of global warming and ecological collapse are already felt by those least to blame. Even if radical and immediate steps to reduce emissions were taken today, the warming already locked in means climate fuelled crises are going to get worse before we have any hope of making them better. The IPCC are unequivocal that the only way to achieve a liveable future is through rapid decarbonisation[12]. As healthcare professionals with an obligation to "protect and promote the health of patients and the public", we must do our part not only to reduce our own emissions, but to communicate and advocate for actions that avoid pouring more fuel on the fire[14,15].

## CONCLUSION

**Given the huge number of diverse challenges facing low resource settings it would be easy to be pessimistic about the prospects of emerging pre-hospital care services – and that is without the necessary acknowledgment that the list above whilst hopefully comprehensive, is certainly not exhaustive. Yet in expanding my knowledge of this area I have been struck by the resilience, ingenuity, and successes of those working tirelessly to turn the tide. And the fact this question has been posed as part of broader conversations around sustainability is hope that the holistic approach needed to find lasting solutions to those challenges may not be too far away.**

*Elizabeth Westwood is a CT2 surgical trainee with an interest in sustainable surgery, currently working in West Yorkshire (UK). She also campaigns with Medact Leeds on health equality and social justice issues both locally and nationally. She is happy to be contacted via email - elizabeth.westwood3@nhs.net.*

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